U.S. Surgeon General's Office . Historical

### HISTORY OF MEDICAL DEPARTMENT ACTIVITIES

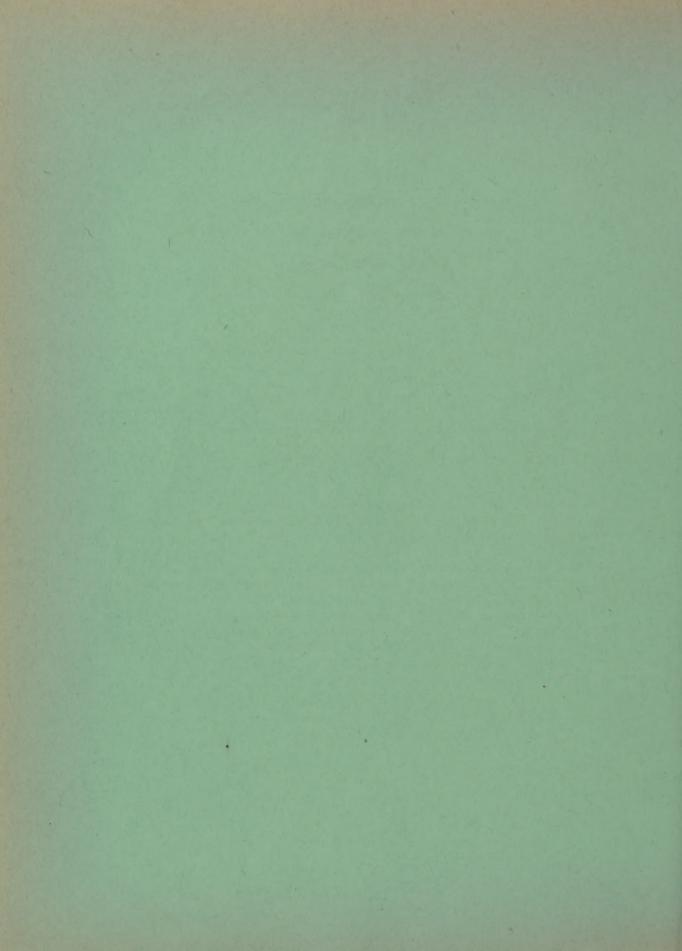
ANTILLES DEPARTMENT

PREVENTIVE MEDICINE

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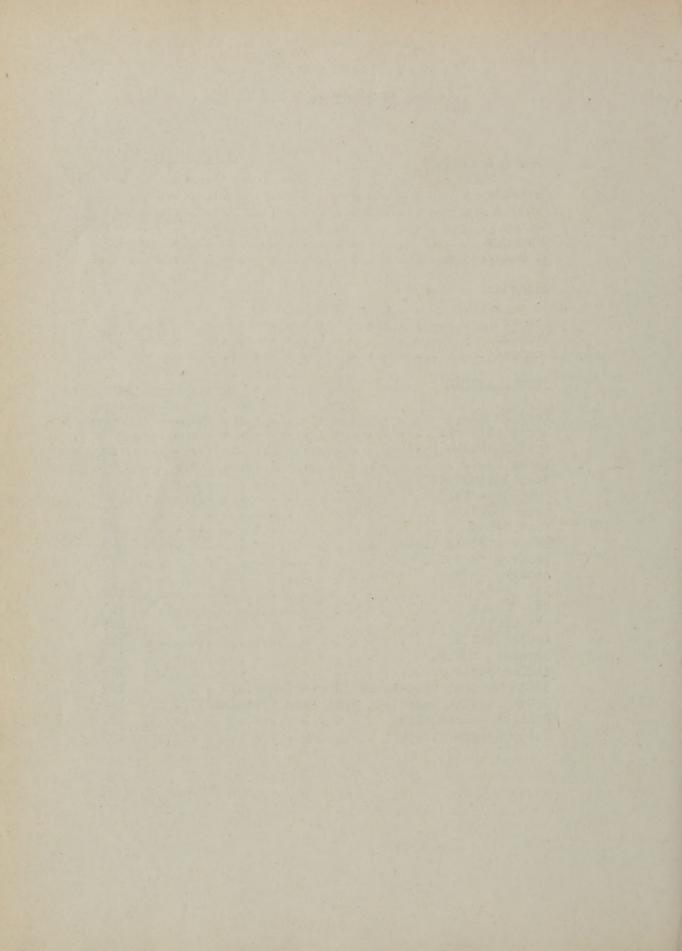
This history is being made available in manuscript form pending the completion of the official History of the Medical Department in World War II, and must be considered as a draft subject to final editing and revision. Persons finding errors in facts or important omissions should communicate with the Historical Division, Army Medical Library, Washington 25, D. C.

It is emphasized that all statistical data in this history are tentative and subject to revision when tabulation of individual sick and wounded report cards has been completed.



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## General

Venereal diseases have always ranked high as a cause of ineffectiveness in this Department. It has been a continual struggle on the part of the Medical Department to combat these diseases, both preventively and clinically, using every available means. The high prevalence of venereal disease in tropical areas is a well known fact, and may be due to the psychological attitude accompanying the warm, slow moving, tropical enchantment of the area. One of man's most primitive drives may be most easily satisfied when the environment offers such conducive measures.

Army installations in this Department are scattered over an area with climatic and geographical variations, cosmopolitan populations, bizarre customs, varied religious beliefs, and where different allied nations have jurisdiction over the civilian population. Governmental measures for the control of venereal disease among the civilian poplation are almost non-existent or if present are haphazardly applied due to political and economic conditions. Throughout the entire Department, and particularly in Trinidad and Cuba, venereal diseases are perhaps even more prevalent than in Puerto Rico. Clandestine relationships are easy to obtain since poverty, overcrowding, and consequent low standards of living are the lot of a large portion of the civilian population. Promiscuity, the basic cause of a high venereal disease rate, is difficult to remove in these areas where economic conditions render it either necessary, or at least tempting, to a large proportion of the women of the underprivileged classes to engage in prostitution regularly or upon opportunity.

It is only through the combined efforts of the Armed Forces, the USPHS, and the IPHS (in Puerto Rico), that these diseases have been held in check to insure a minimum rather than a maximum rate of ineffectiveness in the time of war.

# Problem

The origin of genito-infectious diseases is lost in the by-ways of the early history of mankind. They have long been a public health problem of importance in Puerto Rico and all the islands of the West Indies. The "morbusgallicus" appears in historical documents in the early sixteenth century when Captain Salazar, noted Spanish warrior and right hand man of Ponce de Leon, although untouched by Indian

arrows, succumbed as a result of syphilis. The spread of syphilis, as well as other venereal diseases, takes added impetus concurrently with war. During World War I, there were more than one hundred men suffering from venereal diseases for each casualty in the battlefield. A total of 338,746 men lost seven million days of service during the war as a result of venereal diseases. According to the Veteran's Administration a total of over \$82,000,000 had been used from the close of World War I until 1940 to pay, through the taxpayer, for these diseases among veterans. A substantial proportion of this amount has been spent among the veterans of Puerto Rico.

An analysis of available mortality statistics showed that syphilis during 1936 was about two and one half times as prevalent here (Puerto Rico) as in the continental United States. Syphilis was the responsible cause of death of 26.2% out of 61 cases of sudden deaths investigated by postmortem at the School of Tropical Medicine during 1934.

The prevalence of prenatal syphilis among expectant mothers attending the Fuerto Rican Health Units and at the San Juan Municipal Hospital was 13.6 positive serologically in 2,955 cases, according to the Biological Laboratory report 1934-35.

Special reference is made to the venereal disease problem in Puerto Rico since Puerto Rico is the area of birth of this Department. It is used as the example because of the information available at the Headquarters. Constant liaison between the Medical Department of the Armed Forces, the USPHS, and the IPHS (in Puerto Rico), has been maintained at all times during the existence of military operations in the area.

The following extract is from an annual report by the USPHS, Bureau of Venereal Disease, dated 30 June 1941.

"The past 50 years have witnessed the development of public health practice in this hemisphere . . . the 4 fundamental needs of human welfare, namely, food, shelter, defense, and propagation have been warmly accepted and worked at with due interest by the people in general.

... The administration of the control of VD has been modified and intensified in Puerto Rico since 1938 in pursuant to the inclusion of the island in the authority contained in Section 4-B of the Act of VD of 24 May 1938, Statute 439, as well as to the extension and our (USPHS) participation in Social Security Act, Title VI, during 1939.

Consequently, since 1938 the Bureau of VD with a full time director in charge was established in our Health Department, whose work was to be developed in full cooperation with the Public Health Units program. Prior to this time the Bureau of Transmissible Diseases and Vital Statistics was in charge of the work.

In Puerto Rico the Commissioner of Health is responsible for all health activities in the entire island.

- ... The function of the VD Bureau is to protect public health by endeavoring to reduce the prevalence of VD all over the island, carrying out a continuous attack in all fronts.
  - (1) To uncover all positive cases of VD and the contacts.
  - (2) To bring each case discovered under competent medical care.
- (3) To keep infectious cases under medical care until they are no longer a menace to society or to themselves.
- (4) To prevent new infections through medical education of the public in general, and through legal measures gaining thus the public concern and making them responsible in regard to the sanitary duties.

VD's can not and do not originate in the army, but of necessity they come from the civilian population. Nevertheless, they occupy the first place among the disabling infections in our military forces, as the records of the last World War had demonstrated.

- ... The serologic examination of conscripts show a tremendous increase of the laboratory activities during this current year, because 20,248 selectees were tested and of those 2,416 gave a positive Kahn and Kline tests reaction. Our efforts to register this special type of patient in our VD clinics and restore them to military duties in a short time are shown when it is considered that 901 of the positive cases are receiving specific medical attention in our clinics.
- ... The continuous search for foci of infection, tending to reduce the incidence of VD among the armed forces and personnel working at industries for the defense, have brought about a registration of 1,387 prostitutes. These are kept under continuous, intensive, and adequate specific treatment.
- ... Syphilis and other genito-infectious diseases are without doubt two of the most important secret agents or "fifth columns" which might weaken our manpower and consequently our national preparedness in this respect.

The problem confronting the military forces coming from the States and of those drafted here in relation to VD is an acute one demanding prompt and agressive prophylactic measures to be developed among the civilian population:

- 1. Ten additional VD clinics for prophylaxis and treatment need to be established for day and night services, specially nearby where armed forces are stationed and where national defense industries are at work.
- 2. It is also essential that hospital or an annex to an already functioning hospital be established for the isolation to contagious VD cases and for those which in accordance with sanitary regulation No. 107 for the control of Transmissible Diseases should be isolated, because at present all hospitals exclude VD cases from their list of benefitiaries.
- 3. The enactment of laws compelling premarital and prenatal serologic tests and a medical statement included in the birth certificate as to the syphilitic status of the newborn.

In a speech given by the Department Surgeon on National Social Hygiene Day - 4 February 1942, the following facts were ascertained:

- "... During the year 1941, the Insular Health Department made 20,248 blood tests of Selectees, out of which 2,260 had a positive serology, indicating the presence of syphilis. This is a good indication of the magnitude of the local VD problem. A good percentage of these cases so discovered are now under treatment in the 35 VD clinics of the IH Department throughout the Island.
- ... It must be stressed, however, that VD will always be present in the armed forces as long as it is present among the civilian population. The cooperation of the civilian population is most necessary in control of Venereal Disease, as it is from this population that these diseases must stem."

Early in 1942 an investigation of conditions existing in Puerto Rico revealed that 1,006 women who acknowledge themselves to be prostitutes were registered in Health Department clinics during the month of December 1941 alone. It was estimated that approximately 5,000 such women were operating in the San Juan district. Conditions as this persisted for:

- 1. 35% of population illiterate
- 2. 54 % of families live in 1 room houses
- 3. 5.7 persons in average family
- 4. \$3.50 \$10.00/week average family income.

It is next to impossible under such circumstances to suppress this means of income from the women without offering them other means of livelihood. The high rate of infection among these women necessitated immediate medical attention -- among 120 examined in Aguadilla over 100 were infected with one or more venereal diseases.

In reply to a letter concerning a question of the value of accepting Puerto Rican men with venereal disease into service, the Department Surgeon's Office sent the following indorsement dated 23 June 1942 to The Surgeon General's Office:

"1. Under the special circumstances obtaining in Puerto Rico, an unlimited number of volunteers for Army service is always available. It is felt that the acceptance of volunteers or selectees with venereal disease and making special provisions for their treatment, while many good men without venereal disease are attempting to get into the service, is wasteful of good manpower and of the government's time and money.

- 2. a. Upon examination of 20,248 Selectees in Puerto Rico, the Kahn and Kline tests both were positive in 11.16% of these selectees. This does not include doubtful tests.
- b. Examination of 680 selectees and volunteers at Henry Barracks in February 1942 revealed 83 positive blood Kahns, or 12.2% positive.
- c. Examination of 1007 selectees and volunteers at the Reception Center, Fort Buchanan, P.R., in May 1942 revealed 53 positive Kahn tests, or 5.3% positive.
- d. Acute gonorrhea and chancroid occurs in six and two selectees respectively, out of 1000 in Puerto Rico from study of available figures.
- 3. It may readily be seen that the venereal rate, especially that of syphilis, is much higher than would be found in a comparative group in the continental United States, and the acceptance and treatment of these selectees would place an unnecessary burden on the Army personnel, hospitalization and other facilities in this Department.
- 4. Acceptance of selectees with venereal disease would place a comparatively greater burden on the facilities of the Puerto Rican Department than would be borne by Army facilities in the United States, due to the higher venereal rate among selectees in this Department as compared to the rate among selectees in the United States.
- 5. The acceptance of these men with venereal disease would also have the tendency of raising the venereal rate which, though credit is not taken for disease contracted in civil life, is more likely to occur again in the type of man who already has had venereal disease.
- 6. Recommend that, should the policy of accepting men with venereal disease for Army service be adopted, the Puerto Rican Department be exempted from the provisions of that policy."

With funds made available by the La Follete Bulwinkle Act, together with an Insular appropriation, the Insular Health Department initiated an island wide program for the control of these diseases during the year 1938. By July 1943, there were in operation a total of 57 dispensaries for the diagnosis, follow-up and treatment of venereal disease patients. A total of 46,682 patients, out of which 3,334 were women of low moral character, received treatment during the fiscal year 1941-42. Although there were no statistics available, it was believed that not less than 20,000 women were engaged in prostitution on this island, a large number of whom were living in large centers of population especially in the vicinity of military reservations.

The following information is extracted from a speech given at a Venereal Disease Control Conference by Colonel C. C. Johnston, Department Surgeon, 11 December 1944:

".... In the years 1942 and 1943 the number of cases of syphilis reported to the Insular Health Department (in Puerto Rico) were 10,060 and 12,012 respectively, with corresponding rates per 100,000 of 517.2 and 611.7. The number of cases of gonorrhea reported for the same period were 3,095 and 3,587, with corresponding rates of 159.1 and 181.3. These figures undoubtedly represent only a small percentage of the actual number of venereal disease cases among the civilian population.

In 1943, Costa Mandry, from a review of the literature on investigations based on serology calculates the percentage of positive tests for syphilis for the urban population at 10% for the rural population at less than 5% with a fluctuation between 5% and 6% for the entire island.

An epidemiological analysis of 1,238 cases reported in the Antilles Department for the first ten months of 1944, reveals the following:

... army population

36% of the cases failed to take any prophylaxis

33% of the cases used a condom

55% of the cases had V-Packettes in their possession

45% of the cases named the "pick-up" as the type of contact

11% of the cases used pro-pills

1 to 5 was the ratio of cases of syphilis to gonorrhea

1 to 1.4 was the ratio of cases among continental troops to insular troops (P.R.). (In this connection, 1 to 1.1 represents the strength of continental and insular troops)."

The high incidence of venereal diseases among troops stationed in this area since 1939, presented a problem which has been only partially solved.

# Contributing factors are as follows:

(1) The high incidence of venereal diseases among the civilian population. When local governmental agencies initiate a vigorous venereal disease control program for the civilian population, the Army program will not have to be so all-inclusive. The suppression of prostitution — a civilian function — will in the long run, make for lower Army venereal disease rates. Unfortunately for the reasons stated above, this has not been the case in this department and will only occur after some years of education of the populace.

- (2) The cheapness of alcoholic beverages and consequent over-indulgence in places where pick-ups are readily available.
- (3) Laxity in moral standards brought about by a number of conditions such as foreign environment where restraining influences of society are not binding, nostalgia, prolonged stay in isolated places, and resentment against regimentation.
- (4) The neglect of prophylaxis, brought about by a variety of factors such as drunkenness, low morale and misplaced trust, presents a real problem.
- (5) The ease of cure with penicillin may abolish the sense of fear that has been connected with these diseases and will probably result in increased exposures without prophylaxis.
- (6) The removal of administrative penalties for venereal disease so that they are now considered as any other disease as far as pay is concerned.

The non-effective rate (or days lost from duty) for venereal disease cases has been high. The rate for 1943 was 3.7 and for 1944, 3.4 (first 10 months). The present trend is downward and with the advent of penicillin for the treatment of these diseases a decided drop is anticipated. One important factor in the high non-effective rate was the prevalence of sulfa resistant gonorrhea germs in this area, necessitating prolonged hospitalization. Evacuation of that type of cases to General Hospitals from scattered areas also contributed to the non-effective rate.

The progress in lowering the venereal disease rate in Ruerto Rico and all other bases of this command is one of fluctuating progress. From 1939 through 1945 the overall picture describes its story through sporadic increase and decrease. It is a problem created by climatic and geographical variations, cosmopolitan populations giving rise to different customs and varied religious beliefs, local government political and economic conditions, and numerous contributing factors that may be labeled under any one of hundreds of headings.

While the Medical Department stands constantly ready to give advice and make timely recommendations relative to the professional aspects of venereal disease control, the implementation of all these

measures lies in the hands of the various troop commanders. The success of the application of control measures must of necessity then depend squarely upon the initiative and interest displayed by all commanders.

## Control

Faced with a real tenereal disease problem, the Army devised (an aggressive program for the control of these diseases. Making the control a function of command, commanding officers have supported measures designed to suppress prostitution, reduce promiscuous sexual exposure, and have cooperated with civilian authorities to this end. They have made appropriate use of "off limit" authority and provided recreational activities such as entertainment, athletics, and other recreational facilities to keep the soldier in the intra-cantonment areas. This program was not born overnite to flourish and bring forth amazing and miraculous results. It has been a slow progression from month to month hitting the individual issues as they presented themselves.

The disturbing war factors (overcrowding, famine, importation of large human masses which convey virulent venereal viruses to infect other or are greatly susceptible to be infected by the present viruses, fatigue, laxity of morals and the concurrent excitement due to possible war risks) aggravated the situation. mainly and mostly in the largest urban centers. It created an attractive and lucrative market for prostitution, which in turn, influenced greatly the maintaining of the reservoir of venereal disease among the encamped troops. There was a decided migration of males and young female members of the family attracted by the higher wages offered at the construction centers near the largest towns. The young girls migrating were either prostitutes or eventually became promiscuous lured by the more experienced girls' story of easy money. The prevalence of infection, the lack of personal sex-hygiene, and the absence of sanitary facilities led to the early infection of these new recruits. The influx of thousands of presentable young soldiers from the States with plenty of money in their pockets tremendously increased the number of sex exposures and thus the corresponding increase in the possibilities of infection -- not only among themselves but among the local people.

A Medical Officer, on duty at the Department Surgeon's Office, was appointed Venereal Disease Control Officer (1940), in an advisory capacity in relation to the medical aspects of the control program, evaluation of trends, and the gathering of statistics. At each

post, camp, and station a Medical Officer was designated post VD officer. This officer worked under the direct supervision of the Post Surgeon and was responsible for the medical aspects of the VD program.

The Dept. VD Control Officer directed his efforts entirely to the prevention of venereal disease and the passing on to subordinate medical units the latest information on the control of such diseases. He was responsible for the distribution of posters, pamphlets, and movies designed to teach the soldier the danger of exposure, the dangers attendant upon illicit sexual relations, as well as to teach him the proper use of prophylaxis. The tools for mechanical and chemical prevention were on hand at all times, but their proper and careful use depended entirely on the individual.

This Dept. Control Officer worked in conjunction with civil agencies to locate diseased prostitutes for the purpose of giving them medical treatment in civilian clinics and retiring such sources of infection from circulation. All cases were fully investigated, recording the results of the investigation on the prescribed form (M.D. #140 dated 30 October 1942). Contacts were reported to the civilian health agencies for their investigation.

The year 1942 saw the inception and discontinuance of several abortive attempts of various agencies to control the venereal diseases on the island (P. R.).

During the early part of 1942, venereal disease control as far as the Army was concerned, consisted of periodical lectures to troops, issuance of prophylactic materials, and inspection of various civilian areas to determine whether or not these areas should be placed "off limits" in the interests of venereal disease control.

During the months of May and June 1942, Dr. O. C. Wenger of the Venereal Section of the U. S. Public Health Service arrived in Puerto Rico to establish a system of venereal disease control, aimed at the profession of prostitution on the island. The very energetic Dr. Wenger first made himself acquainted with the venereal disease problem through the Insular Department of Health and the Army and Navy, as well as his own service, and personally held conferences with large groups of prostitutes in the various cities of the island, instructing them in approved methods of personal hygiene, and in methods of prevention of venereal disease as far as their patrons, both military and civilian, were concerned. He met with an enthusiastic response on the part of the local prostitute population who apparently had never heard of personal hygiene as concerning their profession. He induced these women

to provide individual prophylaxis kits for themselves, including douching material, and to have hot water heaters installed in their rooms. Many of these girls purchased both and were wedded to the idea that Dr. Wenger had brought to them -- the idea of both self and patron protection. These girls, many of whom made sexual contact away from their rooms, carried with them in a handbag the necessary prophylaxis materials. These handbags became the standard mark of their profession, and the girls could be easily recognized by the police as prostitutes. An agreement had been made with the Chief of Police that girls carrying these bags and conforming to the prophylaxis measures as laid down by Dr. Wenger would not be molested by the police, because they were recognized prostitutes: and for a while, these measures were in effect throughout a great portion of Puerto Rico. Dr. Wenger also made up posters describing both in words and pictures how to take a proper prophylaxis for the benefit of the patrons, which posters were prominently displayed in the rooms of these prostitutes. The girls furnished mechanical prophylaxis to their patrons, which materials had been furnished to them in turn by the Insular Department of Health. The local supply of hot water heaters and douche syringes was exhausted by the large purchases made by the prostitutes.

Just about the time this system of venereal disease control was taking effect, Mr. Fellhauer of the Federal Security Agency in Washington, arrived in Puerto Rico, with proposition that the policy of the authorities in Washington for venereal disease control was "supression." This meant that all prostitutes recognized as such and practicing their profession should be arrested and detained by the police. A conference was held in the office of the Insular Governor, Dr. Tugwell, attended by the Chief of Insular Police, representatives of the U. S. Public Health Service, the Army, the Navy, the Governor's Office, and the Federal Security Agency, at which time the system of "supression" was discussed. and accepted, for the control of venereal disease in the Puerto Rican Department. This obviated all previous work done by Dr. Wenger. Prostitutes seen carrying their prophylactic materfals in their characteristic containers were immediately recognized as prostitutes by the police, and arrested. Naturally, the prostitutes immediately stopped carrying such identifying materials, and individual protection for prostitutes and patrons was discontinued.

In 1942, the Insular Department of Health, armed with funds supplied by the U. S. Public Health Service, established and opened two locked hospitals for the incarceration and treatment of venereally infected prostitutes. One hospital, a remodeled tobacco factory at Caguas, P. R., containing approximately 150 beds, the

other several wards of the umused Aguadilla District Hospital at Aguadilla, P. R., were shortly filled with venerally infected women. These women, a very small fraction of the estimated prostitute population, were kept in these hospitals on an average of six weeks. and released to again follow their profession. A system was established by the Insular Department of Health whereby prostitutes arrested by the police were examined by the Insular Department of Health and, if found infected, issued a yellow card bearing on the face of the card data as to their identification and a small photograph. On the back of the card was data to be filled in as to theatment. Each prostitute furnished such a card was registered and had to appear at the local venereal disease clinic for periodic (usually weekly) treatment. At the proper time, the Insular Health Department dispatched a female investigator who requested the girl to report for treatment, as required, holding over her the threat of arrest and incarceration should she fail to appear.

In 1942 an agreement was made with the night club owners in San Juan and the Insular police, whereby the prostitutes who frequented the night clubs of San Juan in order to meet soldiers, sailors and civilians, would not be allowed to leave the premises of the night club which they entered for such purposes, until 12:30 A. M., nor to leave at any time with a soldier or a sailor, Since soldiers and sailors were required to be present at their organizations for bed check at midnight, this obviated to a great extent the possibility of contact by the military personnel and prostitutes inhabitating these night clubs. The question arose as to whether or not these girls found it profitable enough to abide by such regulations. Due to a system which the night club owners had set up with the prostitutes who habitually attended their night clubs, the girls were given a "cut" of the drinks which they induced soldiers, sailors or civilians to purchase in these clubs, and thereby they earned a pittance which, with other patronage they may pick up during other times of the day, enabled them to earn a living. Insular police, military police and shore patrol were posted in the night club area to make certain that the girls and the military did not leave the premises of the night club together, the Insular police enforcing the rule as far as the prostituted were concerned. An agreement was also made by the San Juan hotel owners and the Chief of the Insular Police whereby no soldier or sailor was allowed to enter a hotel in San Juan which had previously been used by the military merely for purposes of contact with prostitutes. Several inspections made by inspectors of the Army and Navy and the Public Health Service, failed to reveal the presence of military personnel in these hotels subsequent to the agreement mentioned above. However, upon questioning of some venereal cases in military hospitals, it was found that

venereal disease had been contracted from sexual contact made at local hotels. These hotels were put "off limits" for military and navy personnel.

During the month of July 1942, due to the large number of VD cases occupying many beds in the various Station Hospitals of the Department, the Department Surgeon's Office established a new policy. All uncomplicated cases were to be treated while on full duty status with their organizations, to be confined to camp limits during the time of their infectivity. This system worked well and certainly reduced the venereal population within each Station Hospital. Special latrine facilities were made available during the period of infectivity, and the Post Surgeon supervised and administered the necessary medical treatment.

In 1943 definite progress was made to control venereal diseases in the Department. The following list of measures used in achieving results were extracted from the Medical Department 1943 Annual Report:

- a. Provision has been made for the efficient operation of venereal prophylactic stations in all posts, camps, stations, and in civilian communities frequented by troops.
  - b. Making venereal disease control a function of command.
- c. The applying and enforcing of "off limits" restrictions against certain areas and establishments in civilian communities.
- d. The education of soldiers concerning the nature of venereal diseases, the mode of their spread, the dangers attendant upon sexual promiscuity, and excessive indulgence in alcohol, and the stressing of venereal disease prophylaxis. These measures have been accomplished by means of lectures, radio transcriptions, films, pamphlets, posters, and demonstrations where possible. Use is made of data obtained in reports, Form 140 MD.
- e. The apprehension of, and administration of prophylactic treatment to intoxicated soldiers.
- f. Providing soldiers with individual prophylactics free of charge, and making available such items to all men going on pass.
- g. The assignment of medical officers as full time venereal disease control officers at all posts, camps, and stations.
- h. The appointment of Department Venereal Disease Control Officer.

- i. The disciplinary control and restriction of soldiers of the "venereal disease prone" type.
- j. The interrogation of soldiers, upon return from pass, in order to administer prophylactic treatment to all of those who admit exposure, and have not already received such treatment.
- k. The epidemiological investigation (making use of Form 140 MD) of all cases of venereal disease among soldiers in order to report them to civilian health authorities, so that infected sex partners may be placed under treatment. This measure has not yielded hoped for results and can be given little credit in Puerto Rico and less credit elsewhere for the progress made in venereal disease control.
- 1. The provision of wholesome recreation and entertainment for troops.
- m. The adoption and giving publicity to the policy that where insular soldiers are scheduled for transfer from Puerto Rico, venereal disease will defer their subsequent movement to their new station only until treatment and cure has been effected.
- n. The conduct of routine and surprise physical inspections in order to discover manifest cases of venereal disease.
- o. The "quarantine" restriction to the limits of camp of venereally infected soldiers.
- p. The inspection and testing of samples of condoms to be sold or offered gratuitously to troops, and the condemnation of condoms of inferior quality.
- q. The discouragement, by military and civilian police, of prostitution and sexual promiscuity in the vicinity of military reservations, particularly the activities of street walkers, procurers and taxicab drivers.
- r. The employment of insular social workers (female) to discover prostitutes and report them to military authorities. Upon examination, if such are found to be infected, to see that these women are sent to insular hospitals for the venereally diseased.
- s. The use of sulfathiazole by mouth in the prophylaxis of gonorrhea.

In April 1943 the following letter from Department Venereal Disease Control Officer to the Chief of Staff and AG, Headquarters Antilles Department, dated 4 April 1943, discusses one phase of the relationship between the Medical Department of Armed Forces and the Insular Health Department of Puerto Rico.

"According to information furnished by Dr. Joseph Dean of the U. S. Public Health Service, federal venereal disease control funds in the amount of \$381,411,49 were made available by that agency to the Insular Health Department for a program to be carried out during the fiscal year 1942-43. Besides an Insular appropriation of \$75,000 for this same purpose, there are other funds from Title VI, Social Security Act, available for venereal disease control, making a total of approximately \$500,000. However, out of the appropriation of \$381,411,49 available from Federal venereal control funds for the fiscal year 1942-43, only \$268,221.57 had been budgeted by the Insular Health Department up to March 31, 1943. Should the present trend of expenditures continue. Dr. Dean is of the opinion that by June 30, 1943, there will be a balance of approximately \$200,000 appropriated for venereal disease control which will not be expended, a large part of which will have to be returned to the Federal Treasury. In view of the acute venereal disease problem, both among the military and civilian population, this seems to be most undesirable. The Medical Department has repeatedly urged both the Federal and Insular Public Health Service of the necessity for expansion of treatment facilities to ambulatory patients with these funds that have been made available. Out of nineteen new venereal disease clinics budgeted by the Insular Health Department and approved by the U. S. Public Health Service on January 1st. 1943. only six were opened as of March 1st, 1943. One of the greatest difficulties in the Venereal Disease Program of the Insular Health Department during the past few months seems to have the lack or an adequate supply of sulphonamide drugs for the treatment of gonorrhea patients. During the months of January, February and March, a large number of clinics have not had sulphonamide drugs for the treatment of patients, and the personnel has been entirely inadequate as revealed by the report of the Surgeon, Losey Field. It is believed that this has been a factor in the increased incidence of venereal diseases among enlisted men during this period. In order that diseased prostitutes who serve as sources of infection to the Armed Forces can receive treatment, the Army has agreed to sell the Insular Health authorities one hundred thousand (100,000) tablets of sulfathiazole."

In December 1943 the following letter of Command from AGO, Headquarters Antilles Department, dated 15 December 1943 was issued the commanding officers of posts, camps, and major units in Puerto Rice:

- "1. There will be a meeting each month of Venereal Disease Control Officers at all posts, camps, stations and major units on the island of Puerto Rico.
  - 2. ... on the first Tuesday of each month ... APO 851.
- 3. Each officer will familiarize himself beforehand with Venereal Disease rates at his unit, control measures, problems, etc. He will formulate recommendations and questions.
- 4. These meetings are for the purpose of acquainting the Department Surgeon with all problems and activities of Venereal Disease control. He will relay information to Commanding General for use at monthly meetings of Commanding Officers of Posts, Camps, Stations and Major Units.

Definite steps were taken in 1944 to improve prophylactic station facilities in order to improve the quality of early treatment and publicize prophylaxis. New or renovated stations were equipped with hot water and with fresh and properly prepared drugs. Efforts were made to constantly improve management and personnel. The importance of clean, properly designed, and properly managed prostations was stressed, since in reality it is a dispensary and reflects the interest of the Command in the venereal disease problem.

In April 1944 the Commanding Officer of each company, or unit of similar size, designated a subordinate officer to function as the company Venereal Disease Control Officer. He was to be assisted by the company non-commissioned officers.

The following information was extracted from a letter sent to General Dooling in Panama by the Department Surgeon, Colonel C. C. Johnston, dated 3 August 1944:

"The progress in lowered venereal disease rates is not as constant as I would like to see. While it is true there is a steady diminution of the number of cases per month, we are faced with a situation which will make for sporadic rises in our rates, as is evident for the month of July. Whenever there is a considerable troop movement indicating a staging for subsequent transfer to sectors other than the Island of Puerto Rico, the soldiers involved at once seek to find a means of remaining behind. (While the following cannot be proven, it is the concensus of opinion of venereal disease control officers, Puerto Ricans too, that some of the men deliberately hunt for an infected prostitute in hopes of contracting venereal disease and gaining at least a delay in leaving the Island). It is very significant that whenever there is an extensive troop movement scheduled, the number of cases in that group rise sharply."

The following letter in reference to time lost was received in January 1945 by the Commanding General, Headquarters Antilles Department: 6

"During 1944 there were nine hundred ten (910) new cases of venereal disease in the Panama Canal Department and one thousand seven hundred thirteen (1,713) new cases in the Antilles Department. The average number of days lost per case during the year in this Command was twenty and sixtenths (20.6) days. The average number of days lost per thousand men for the year was eight hundred twenty-eight (828). The total number of days lost in this Command during 1944 from venereal disease was sixty-five thousand six hundred seventy-one (65,671) days. Of these, eleven thousand six hundred eighty-nine (11,689) days were lost by treatment of EPTS cases.

The time lost from venereal disease in 1944 is excessive. Such time lost can be reduced by a significant lowering of the venereal disease rate and/or reduction in the days lost per infected case.

The diagnosis of venereal disease must be accurately established on a scientific basis but no unnecessary delays in reaching a diagnosis should be permitted. The administrative delays in admitting to or discharging a treated case from the hospital will be kept to an irreducible minimum. Treatment time should be reduced by maximum use of penicillin as outlined in TB MED 96, 21 September 1944 and TB MED 106, 11 October 1944 and as outlined in letter CDC 441, addressed as above subject: "Penicillin Therapy of Gonorrhea and Syphilis;" dated 31 October 1944. In order to reduce administrative and patient time lost, paragraph 2c of above letter is hereby rescinded. Forms CDC II, 15 November 1943 already completed will be forwarded to this Headquarters."

Throughout the Antilles Department an educational program has been in effect over the period of years covered by this history. The objective of the educational program has been to provide maximum indoctrination of each soldier in the ways and means of prevention of venereal disease. The techniques employed for attaining this objective have been as follows:

Lectures: Lectures on venereal diseases are given to all enlisted men in this Department periodically. A six hour course on instruction in venereal diseases and their prophylaxis is given to trainees. Officers and non-commissioned officers are instructed on venereal disease control measures and teaching technique.

Motion pictures: Motion pictures in English and in Spanish have been shown periodically to all service men.

Posters: Posters in English and Spanish have been distributed to all posts, camps and stations for display at regular intervals in bath-houses, other places where men congregate.

Pamphlets: Pamphlets produced in this Department and others requisitioned from the Surgeon General, in English and Spanish, have been widely distributed.

All these educational aids have emphasized the fact that abstinence is the only fool-proof preventive of venereal infection and that prophylaxis or early treatment, is effective when properly used.

Educational efforts have been directed to the enlisted man in groups of 3 to 5. To teach proper use of chemical prophylaxis, actual demonstrations have been encouraged. To teach mechanical prophylaxix models have been improvised.

Favorable results of the Venereal Disease control program in this Department are evidenced by the declining yearly rates obtained since 1942. The annual rate for the old Puerto Rican Sector for 1942 was 81 per thousand per year. The rates for the Antilles Department for the years 1943, 1944, and 1945 per thousand per year were 73, 48, and 29 respectively.

Venereal disease control is definitely a Command responsibility and is so considered by the Commanding General of the Antilles Department. When this point is appreciated to the fullest extent by each and every officer concerned, then and then only can the reduction in Venereal disease incidence be lowered to the point desired a point where the Armed Forces might consider the diseases negligible. The problem has been meticulously approached from all angles and measures designed to lessen the incidence, but the final solution to control lies in the full cooperation of each and every individual concerned.



THE NOMOGRAM IS A MATHEMATICAL CALCULATOR USED

FOR HURRIED CALCULATION OF VENEREAL DISEASE RATE. A

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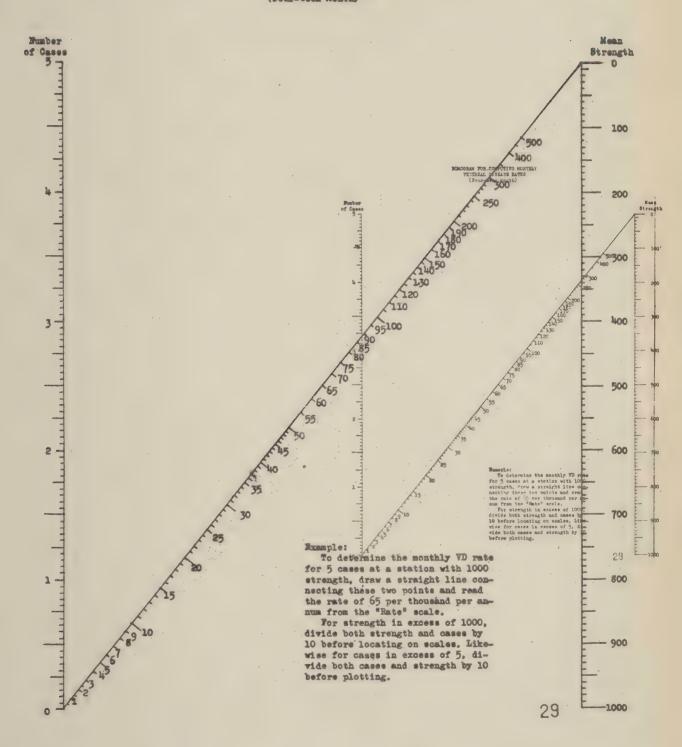
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MONTHLY VENEREAL DISEASE RATES PER THOUSAND FOR STATIONS COMPRISING THE ANTILLES DEPARTMENT FOR YEAR 1941

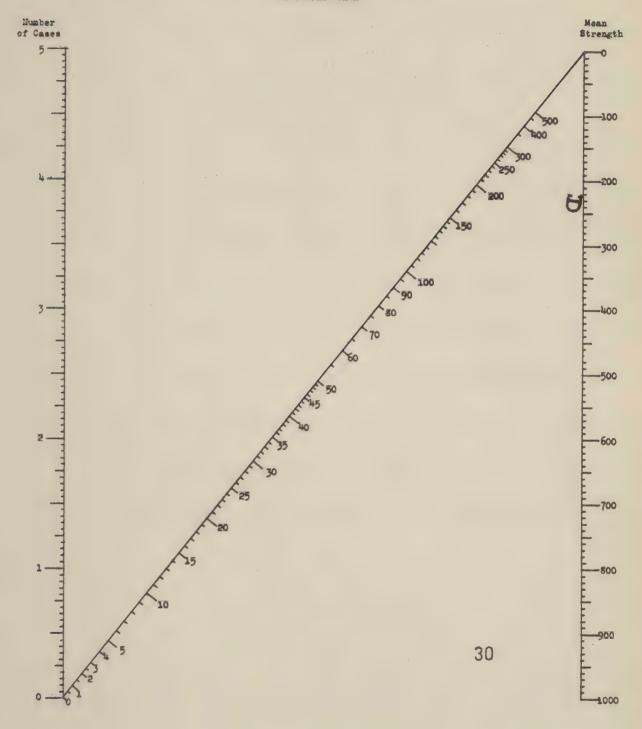
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Fort Brooke, P. R.	8	11	2	146	74	24	75	742	147	133	132	63
Continental	176	9	16	53	143	69	52	53	32	159	136	69
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Fort Buchanan, P. R.	49	58	80	28	99	寻	62	20	8	101	69	92
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Insular	30	300	56	30	†79	38	62	129	69	98	.61	102
Henry Barracks, P. R.	170	108	108	73	142	62	72	98	79	100	111	66
Continental	75	202	172	67	164	30	93	166	19	133	77	69
Insular	72	45	67	77	49	78	62	62	19	77	138	126
Losey Field, P. R.	52	95	135	119	83	177	61	77	100	115	33	96
Continental	52	66	124	146	79	38	2	81	105	59	30	76
Insular	0	0	255	0	102	200	192	62	78	0	54	108
Camp Tortuguere, P. R.	3	86	50	36	19	21	59	17	7	680	81	200
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Fort Buchanan, P. R.	800	105	109	787	1 20	69	177	76	6	-
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Antigua, B. W. I.	6	0	0	C	134	20	80	18	22	-
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MONTHLY VENEREAL DISEASE RATES PER THOUSAND FOR STATIONS COMPRISING THE ANTILLES DEPARTMENT FOR YEAR 1942 (Con'd)

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JUL	- Spraggra	63	0	72	75	20	43
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MAY		5	0	56	68	82	96
APR	1	39	155	22	200	72	18
MAR	-	1	0	87	66	112	68
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JAN	(		0	0	8	98	200

# STATIONS COMPRISING 1943 THE ANTILLES DEPARTMENT FOR YEAR MONTHLY VENEREAL DISEASE RATES PER THOUSAND FOR

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MONTHLY VENEREAL DISEASE RATES PER THOUSAND FOR STATIONS COMPRISING THE ANTILLES DEPARTMENT FOR YEAR 1947 (Con'd)

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# STATIONS

St. Thomas, V. I.
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OCT	97	116	124	42	50
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FEB	980	101	83	82	26
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MONTHLY VENEREAL DISEASE RATES PER THOUSAND FOR STATIONS COMPRISING THE ANTILLES DEPARTMENT FOR YEAR 1944 (Con'd)

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	SEP	0	0	0	22	58	0	23	53	0	0	0	0	35	25	0	80	0	371	0	0	0	100	22	6	59	72	0	300	201	440
t rea	AUG	0	0	0	53	148	81	118	23	99	105	146	0	0	C	0	0	0	С	0	0	0	27	36	0	0	0	0	35	21	3/1
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# MONTHLY VENEREAL DISEASE RATES PER THOUSAND FOR STATIONS COMPRISING 1945 THE ANTILLES DEPARTMENT FOR YEAR

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# MONTHLY VENERBEAL DISEASE RATES PER TROUSAND FOR STATIONS COMPRISING THE ANTILLES DEPARTMENT FOR YEAR 1945 (Con'd)

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Batista Field, Cuba	60	20	62	18	16	8	23	0	17	02	13	Ö
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Benedict Field, St. Croix, VI	0	0	0	0	0	0	265	0	0	0	0	0
Continental	0	0	0	0	0	0	394	0	0	0	0	0
Insular	0	0	0	0	0	0	0	0	0	0	0	0
British Guiana, S. A.	7.7	55	22	0	Ö	36	29	04	16	12	13	62
Continental	16	32	56	0	0	33	25	43	17	0	20	32
Insular	0	172	0	0	0	99	87	0	O	87	0	115
Curacao, N. W. I.	27	103	50	63	147	16	04	0	60 ger	0	0	0
Continental	90	45	110	0	4	0	0	0	0	0	0	0
Insular	0	153	0	117	49	53	72	0	141	0	0	0
French Guiana, S. A.	127	116	79	0	0	83	0	0	0	0	0	0
Continental	176	0	0	0	0	0	0	0	0	0		0
Insular	0	382	251	0	0	274	0	0	0	0	0	0
Jamaica, B. W. I.	0	300	0	0	27	0	77	61	121	0	0	77
Continental	0	107	0	0	39	0	821	99	200	0	0	0
Insular	0	0	0	0	0	0	0	0	565	0	0	650
St. Lucia, B. W. I.	55	108	87	25	0	129	0	200	104	911	101	0
Continental	99	2	58	0	0	14. 14.	0	0	9	245	187	0
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Continental	0	0	0	0	0	0	0	0	0	0	0	0
Insular	64	0	78	0	0	80	21	0	0	0	0	0
Trinidad, B. W. I.	25	475	2	191	200	P	25	8	0	27	56	949
Continental	8	65	22	_	7	77	28	22	5	15	5	53
Insular	53	11	202	23	3	27	17	13	20	37	53	57
Zandery Field, Surinam, S. A	0	0	164	159	0	18	0	54.	104	27	66	0
Continental	C	0	19	47	0	28	0	0	7	51	0	0
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ANTILLES DEPARTMENT	37	37	34	30	50	251	56	23	20:	20	1971	20
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One of the most serious health problems encountered in the history of Preventive Medicine in this area, has been caused by the persistency of the Anophelene mosquito. The warm, damp, tropical climate of the Caribbean Zone harbors conditions conducive to the establishment of excellent breeding nests.

Through careful and accurate planning and action the Medical Department's efforts have held the foci of infection in hand, thus permitting safe operation of troops throughout the theater. At one time the greatest cause of non-effectiveness, malaria now ranks in the very lowest category in this respect.

Greatest reference is made to Puerto Rico since it is the center of operation for the Department, and information is readily available at Headquarters. The 392nd Medical Malaria Control Unit History adequately covers the pertinent Malaria information in the southern extremities of the Department. It may be found as a section of Block VI of this history.

#### PROBLEM

In spite of the low malaria rate in the Antilles Department for the year 1945, malaria still presents a serious threat to the health of the troops stationed in this area if the proper preventive measures are relaxed. Among civilian populations, malaria maintained a very high rate of morbidity and mortality in the areas covered by the Antilles Department. The very low rate of malaria incidence among troops in this area was directly attributable to the education program, individual control measures, environmental control measures and the application of the latest developments in the field of mosquito repellents, insecticides and larvicides.

In the Antilles Department, as in most all tropical areas, malaria presented one of the greatest obstacles to the construction and maintenance of military installations, and on its control depended the practicability and efficiency of troop operations. Because of the physical characteristics of the area and specific military requirements many of our bases were located in low marginal areas where prolific mosquito breeding has always required vigorous and continuous anti-mosquito measures. Extensive temporary control work was usually started along with the first construction operations, while the

plans for permanent work were incorporated into the over-all plans for the bases.

Malaria constitutes one of the most serious health problems of Puerto Rico. This disease kills an average of 2000 inhabitants every year. It ranks fifth in the list of deaths for Puerto Rico. During the year 1940, the Insular Health Department reported a total of 23,758 cases of malaria and 1817 deaths with rates of 1268.9 and 97.0 respectively per 100,000. In 1941 a total of 23,484 cases and 2282 deaths were reported, with rates of 1228.7 and 124.6 respectively for 100,000. In the year 1942, a total of 21,301 cases and 1933 deaths were reported with rates of 1099.8 and 99.4 respectively per 100,000. The mortality rate expected for the year 1943 is about 63.1. a substantial reduction from previous years. With very meager funds the Insular Health Department continues its program of Malaria Control, which consists essentially of the treatment of patients to reduce mortality and eliminate foci of infection, anti-larval work in a number of hyperendemic districts, and the use of permanent measures in selected districts where the disease is most prevalent.

Malaria ranked as the first cause of disability among the armed forces of the island during the year 1942. During 1943, malaria ranked last as a cause of disability among the armed forces in the island. A total of 731 cases of malaria were registered among military personnel during 1943 as compared with 1698 cases in 1942 and 2502 cases during 1941. Sixty seven percent of the cases for 1943 were reported in the first six months of the year.

Since malaria is highly endemic in Puerto Rico, continuous surveillance of anopheline densities is warranted and has been exercised throughout camps, posts, and stations in this sector, within a two-mile limit of the reservations. Reduction of anopheline densities are accomplished by temporary and permanent control measures. In 1943 gratifying progress was made in the permanent elimination of anopheline breeding in the vicinity of Losey Field, Camp Tortuguero, Fort Buchanan and in Camp O'Reilly, P. R. reservation. A study had been made of anopheline breeding areas in Ensenada Honda and recommendations were submitted for permanent control measures at this base.

It is believed that protection of the troops against the bite of mosquitoes through screening, insecticiding and use of mosquito bars has been responsible to a large extent for the relatively low malaria incidence as there was no significant reduction in the anopheles density within a radius of two miles around Army posts, particularly at Fort Buchanan, where the greatest reduction of malaria incidence has taken place, and which formerly furnished one—third of the cases for the Department.

#### CONTROL

Protection of troops against mosquito bites by screening, insecticidal sprays, mosquito bars, the use of headnets, gloves and repellents by night guards, and follow-up treatment of patients to eliminate gametocyte carriers was a major consideration of the malaria control program inside Army reservations, especially during the latter part of 1942. Several Department memoranda were issued covering the methods to be employed in order to reduce the risk of infection among troops at different stations. In view of numerous large areas of anopheles breeding existing in the vicinity of several military reservations where adequate treatment with larvicides was practically impossible, measures directed against adult mosquitoes were of paramount importance in the malaria control program; such measures to be carried out until the anopheles density within a two mile radius of Army posts could be reduced to a safe level by temporary or permanent control measures.

Special efforts to protect toops from mosquito bites were made at Fort Buchanan where hydraulic fill operations undertaken by the U.S. Engineer Department had created extensive breeding areas, due to lack of concurrent compensatory drainage. These areas, together with heavy breeding in sugar cane fields in the immediate vicinity of the reservation and a large swamp located within a two mile radius, made larval control extremely difficult as revealed by a prevailing high mosquito density throughout the year.

Beginning with July 1942, screens were provided for troops living in unscreened barracks, doors were adjusted, old screens were repaired, spraying with pyrethrum was started, the treatment of carriers was enforced, and guards were inspected to encourage the use of headnets and gloves. As a result of this program, the average monthly attack rate at this reservation was reduced to 50 per 1000 strength for the period September to November 1942, as compared with a rate of 212 for the same period during the previous year, and an average monthly rate of 170 for the previous three months of the same year.

Upon recommendation of the Department Surgeon, the U. S. Engineer Department has approved a project for the construction of a dragline ditch which will provide partial drainage for the Buchanan area at a cost of approximately \$94,000. A second project which provided for the complete drainage of this post was submitted and awaiting approval. A third project which contemplated filling of low areas inside the reservation and concrete invert lining of present drainage ditches was prepared.

During July 1942, the U. S. Engineer Department made available a sum of \$40,000 for malaria control activities within Army posts.

An additional appropriation of \$40,000 was made available in January 1943 for the same purpose by this agency. These funds were spent under the direction of post engineers with the advice of post surgeons to eliminate anopheles breeding by permanent methods inside Army reservations.

Post Commanders were requested to prepare projects for the complete elimination of anopheles breeding at each post on the island and submitted them to the Commanding General for final approval. These projects were prepared with the technical assistance of the Department Malaria Control Officer and members of a Malaria Control Board. As soon as these projects were completed, they were reviewed by the Board, and funds for the execution of work was requested from the U.S. Engineer Department.

The flight range of the anopheles mosquite in Puerte Rice is approximately two miles. Anopheles control in the vicihity of Army posts is the responsibility of the U. S. Public Health Service, with the exception of the treatment of patients and gametocyte carriers among the civilian population, which is being carried out by the Insular Health Department. Up to the present time, the U. S. Public Health Service had limited its activities to the use of larvicide and minor drainage operations. Approximately four hundred men were employed by this agency in larvicidal work in the neighborhood of Army reservations, and over six thousand pounds of paris green per month were used in the treatment of several thousand acres of wet land at a total cost of over \$25,000.

At Losey Field, Camp Tortuguero and Fort Buchanan, extensive marsh and swamp area, together with large wet fields of sugar cane, were responsible for the major portion of anopheles breeding. At Camp O'Reilly minor water courses, including old sugar cane ditches and four small streams, constituted the main breeding areas. At Borinquen Field large areas of sugar cane land and one large swamp were the major sources of breeding.

Mosquite traps were located inside each Army post and within a radius of two miles in their vicinity in order to determine anopheles density. Frequent search for larvae was carried out both inside and outside Army reservations.

In 1940 a project sponsored by the Insular Health Department for the permanent eradication of anopheles breeding in the vicinity of Lesey Field, Camp Tortuguero and Fort Buchanan was approved by the Works Progress Administration. This project contemplated the expenditure of \$423,881 primarily on tile drainage of wet land with considerable anopheles breeding within a radius of two miles of

these Army reservations. During the month of July 1942, a second project, sponsored by the Insular Health Department and the U. S. Public Health Service, was submitted to the W. P. A. providing for an additional appropriation of \$3A4,610 for the continuation of permanent malaria control activities on an island-wide basis. Out of the original appropriation, \$206,944 was expended at Losey Field, \$84,628 at Fort Buchanan, and \$49,727 at Camp Tortuguero under this program conducted by the U. S. Public Health Service. Considerable progress has been made in the permanent elimination of anopheles breeding in the vicinity of these three Army posts.

Considerable progress had been made during the year 1943 in improving laboratory diagnostic standards, field studies in different areas and the collection of epidemiological data. Field surveys have been made at Borinquen Field, Salinas Maneuver Area, Ensenada Honda, Benedict Field, St. Croix, and Fort Simmonds, Jamaica.

A malaria report card was introduced in January 1943, and has proven to be of great value for collecting data in a convenient form for analysis. Preliminary analysis of the malaria report cards received during the first six months of the year were completed. The findings are presented in the accompanying table. Method of analysis and definition of terms is as follows:

- a. Probable Source of Malaria: The cards of primary cases were divided into five groups:
- (1) Camp: Those individuals who did not leave the home station during the 30 days prior to onset of illness.
- (2) Camp and Pass: Those individuals who left camp on an overnight pass during the period from 8 to 30 days prior to onset.
- (3) Camp and Different Night Station: Those individuals who left camp to assume duty at a different station during night.
- (4) Maneuvers: Those individuals who were on maneuvers from 8 to 30 days prior to onset of illness.
- (5) Civilian Life: Those individuals entering the army from 8 to 30 days before onset.
- (6) Relapses: A case of P. vivax malaria was arbitrarily assumed to be a relapse if there was a history of previous malaria within a twelve-month period. In P. falciparum malaria the time limit was set at six months.

- b. Number taking Prophylaxis: Those individuals receiving prophylactic atabrine or quinine at some time during the two months prior to onset of illness.
- c. Delayed Hospitalization: Changes of Station: Cards on primary cases reporting a change of station were arbitrarily classified:
- (1) If a change occurred 7 or less days prior to onset of illness, case was attributed to the old home station.
- (2) If change occurred 8 to 30 days prior to onset, the case was arbitrarily attributed to the station where the greater proportion of time between the 8th and 30th days was spent.

## d. Discussion of findings:

(1) It is felt that in general the analysis presented an accurate picture of malaria in Puerto Rico. For example, in the past, numerous cases of malaria were attributed to Henry Barracks although anopheline catches have been low; of the 34 cases hospitalized there during the first six months of this year, only 2 can be attributed to the post.

Sanitary Corps Officers were generally assigned to act as Post Malaria Control Officers with gratifying results. In camps and stations where extensive malaria control projects were undertaken, two Medical Department enlisted men, specially selected and specially trained, were assigned to Station Hospitals for full time malaria control duty. They were charged with assisting in the development of malaria discipline among troops by aiding in instruction and supervision under the guidance of the post Malaria Control Officer. Anti-malarial details, referred to in paragraph 5c (3), Training Circular No. 108, War Department 1943, and consisting of a minimum of two enlisted men, including one non-commissioned officer, were formed in each company battery or similar unit in order to assist unit commanders in the control of malaria. These details were carrying out ordinary anti-malarial house-keeping measures in and around the company encampment.

In order to have available information as to the status and progress of mosquito proofing measures, degree and extent of adult mosquito hazard, and for the purpose of comparison of control measures in camps and stations where extensive malaria control projects were undertaken, data was gathered in the last two months of the year 1943 and reported in the form of an intra-cantonment adult mosquito

index and a mosquito proofing index. In the former index, mosquitoes were collected each week from a representative number of occupied buildings and classified as anopheline and non-anopheline. In the latter index, a representative number of buildings were inspected and mosquito proofing defects noted. Since establishing these indices a reduction to zero in many cases, of adult mosquito population in occupies barracks were obtained, indicative of excellent malaria discipline among troops. A reduction in the number of defects in mosquito proofing of building was also noted.

A Department Malaria Control Officer, functioning under the Department Surgeon, was appointed by the Commanding General in December 4, 1942, in order to coordinate all malaria control activities to be carried out at different Army Posts and to collaborate with other agencies in charge of the extra cantonment malaria control program. He was authorized to make inspections as to the progress of malaria control activities in the various posts, and advise Commanding Officer, Post Surgeons, and Post Engineers of approved measures for the control of malaria in the Department. Many visits were made during the year 1942 to various posts in conformity with the above instructions.

In December 29, 1942, a Malaria Control Board was established, consisting of the Department Malaria Control Officer, a representative of the United States Public Health Service, and a representative of the District Engineer Office. This board was charged with advising and assisting Post Commanders in the formulation of plans and preparation of projects for both intra and extra cantonment malaria control work as concerned their posts.

Post Commanders made full use of the Department Malaria Control Board to insure that their plans and projects were in accordance with the best malaria control principles, were adequate in scope, and insured the proper technical execution of their projects.

At posts where the United States Public Health Service was not operating an extra cantonment malaria control project, the District Engineer executed the extra cantonment malaria control project and availed himself of the advice and assistance of the Department Malaria Control Board in the execution of the post extra cantonment malaria control project formulated by respective Post Commanders.

During the year 1943, new methods and new larvicides were developed which offered the possibility of providing adequate control in areas which formerly were inaccessible for temporary control measures, and which presented such serious obstacles for

permanent work that the cost and time for completion became excessive for the results required. One of the most practical of those was furnished be the development of DDT and the utilization of an airplane in its application. Being able to spray this powerful insecticide from the air over inaccessible swamps brought most all conditions within the possibility of satisfactory control. Also, the time required for treating large areas was cut to an incomparable llw; an area which formerly could not be completed covered with a crew of laborers in days could now be treated in a few hours.

Preliminary data indicated that with this new method of control, combining quick coverage with low cost, many of our ideas on the necessity for costly permanent work could be revised and, in some cases, abandoned. Some projects which were scheduled to begin 1944 fiscal year were postponed until a study under actual field conditions could show whether the advantages gained by this method did not overshadow the original plans.

Most all preliminary data was obtained from work done at Fort Bundy, Puerto Rico. The area selected consisted of some 1900 acres of marginal land and inaccessible mangrove swamps. All post activities were unable to control the breeding in the area during the wet season. Annual bait traps located on the swamp margins periodically gave catches of over 1,000 anopheline mosquitoes per night, despite an active program carried on by both the Army and the U.S. Public Health Service.

In October 1944 an I=4 type plane was equipped with a Husman-Loncey spraying unit, and an M=1 type Chemical Warfare decontamination unit was obtained for mixing DDT in diesel oil. Four hundred gallons of diesel were placed in the decontamination unit for each batch. To this, 160 pounds of DDT dissolving powder was added for a 5% solution. The holding tank of the spraying unit held about twenty gallons of the solution, and at an application rate of one quart per acre, each flight could theoretically cover 80 acres. First applications were not as evenly distributed as desired, but subsequent flights had improved the technique until then, a fairly uniform dose could be expected over the entire area. This allowed 0.1 pounds of DDT per acre which was considered sufficient to kill the mosquito adults and larvae present at the time of spraying, but had to be repeated regularly to control the later influx.

The effect on mosquito reduction was observed by the continuous operation of animal bait traps and New Jersey light traps for adults.

and by systematic dippings for larvae. Results showed a marked reduction in both adult and larvae numbers following the spraying. Trap catches made two days later usually showed only from 0% to 10% of the pre-spraying number. This condition remained in effect for about a week when, unless the area was resprayed, the densities tended to increase again. More recent observations indicated that after a series of these light applications a residual might be built up which allowed an increase in the time between sprayings. Much more study and observation would be required before the full possibilities of DDT could be stated, but from results seen it could be assumed that airplane spraying of a DDT solution would have an important part in future malaria control plans.

Further uses of the chemical for malaria control consisted of spraying the solution on the walls and ceilings of native huts on and adjacent to military establishments in an effort to reduce the number of infected mosquitoes. This was done by dissolving DDT powder in kerosene in an amount equal to 5% by weight, placing the solution in knapsack sprayers and applying at a rate of about one gallon per thousand square feet of area. Unrecorded observations lead to conclusions that mosquitoes, after biting an individual, landed on the treated walls to rest, and were thereby killed. In some instances killing effect had been noticed two months after the treatment.

Other advances in the efficiency of temporary control were made outside of the DDT field. A cooperative effort between the Army and U. S. Public Health Service had succeeded in utilizing an M-4 Chemical Warfare apparatus for creating an emulsion of oil and water for use as a larvicide to replace straight oil. The emulsion combined the advantages of larvicidal effect, penetration, and durability with a reduction in oil quantities to show an equal, if not better, larvicide at a marked reduction in cost. The solution was made by power mixing oil and water under high pressure until a milky emulsion was formed which exhibited homogenized properties. Optimum ratios of water to oil appears to be about 3 to 1. Very favorable results with this were obtained by the U. S. Public Health Service at Losey Field, Puerto Rico, where they had put it to widespread use. The truck which mounted the decontamination unit could be driven into the control area where it could act as a focal point for operations. Emulsion could be distributed directly from it to the water surfaces by pumping from the tank through a distributing hose, or, in areas which were inaccessible for the truck, it could act as a nearby supply point for a crew with knapsack sprayers and thus save the time usually lost by men returning to their base for bank refills.

With the advantages of new materials and the knowledge of their uses obtained during the year 1943 it could be expected that satisfactory malaria control could now be obtained more efficiently than ever before.

Airplane spraying of DDT solutions to a large breeding areas, residual DDT applications to be inside of native huts and army quarters, and the uses of oil-water emulsions offered new effective aid to the permanent work already completed. Having a pilot assigned to the airplane spraying work insured prompt control of areas in Puerto Rico which created unforeseen hazards by sudden and continuous flooding after torrential rains. Attempts were made to obtain similar advantages in other areas of the Department.

In previous years and during part of 1944, the greatest amount of work and funds were expended on drainage and ditching operations plus larviciding. The primary construction work for environmental control work was completed and in addition to the larviciding work the only environmental control work resorted to consist of the maintenance of the previously constructed drainage ditches. Hence, the major factor in the cost of malaria control work was practically eliminated.

In 1945 in the larvicidal work an emulsion of water and oil (diesel or fuel) in the rates of 3 parts water to 1 part oil was still utilized. The addition of DDT to the oil portion of the emulsion had further increased the efficiency of this larvicide and the results were very satisfactory. This larvicide was applied by knapsack sprayers or by the M-4 Chemical Warfare apparatus in which the emulsion was prepared.

During the early part of 1945 two L-4 type planes, equipped with a Husman-Loncey spraying unit were in use. This method was inefficient and time wasting in spraying large areas and required frequent loadings. Recently a G-47 plane was furnished, equipped with two 250 gallon tanks. each tank discharging into a two inch pipe which was suspended below the plane. Discharge was by gravity and spray was formed by the wind action. By this method large areas could be sprayed in short time. The plane flies at 120-140 miles per hour, at elevations from 50-150 feet above ground. The solution used was a 5-8% solution of DDT in kerosene or diesel oil and the DDT was applied in a density of 0.2 pounds per acre. Spraying intervals varied from 2 weeks to 6 weeks, depending on rainfall and temperature conditions. No set schedule was maintained for the spraying. Mosquito densities, adult and larvae, determined the interval of spraying. The C-47 spray plane was based at Borinquen Field and was dispatched whenever needed. one airplane being sufficient for the needs of the entire Department. Fort Bundy, Atkinson Field, Waller Field, Fort Read, Fort Simonds, and Vernam Field were the areas utilizing the aerial DDT spraying. Use of aerial DDT spray was not utilized in areas where sugar cane fields fall into the control areas since the effect of DDT on the

cane and the final refined sugar product was unknown. The use of a second C-47 plane was requested in view of increased use of aerial DDT spray planned for the coming year.

The use of aerial DDT spray made it possible to increase the efficiency of temporary control measures. Great expense was saved in eliminating large larviciding crews and greater efficiency was obtained since it was possible to cover large areas more thoroughly as well as areas which previously were impenetrable and impossible to spray by hand methods.

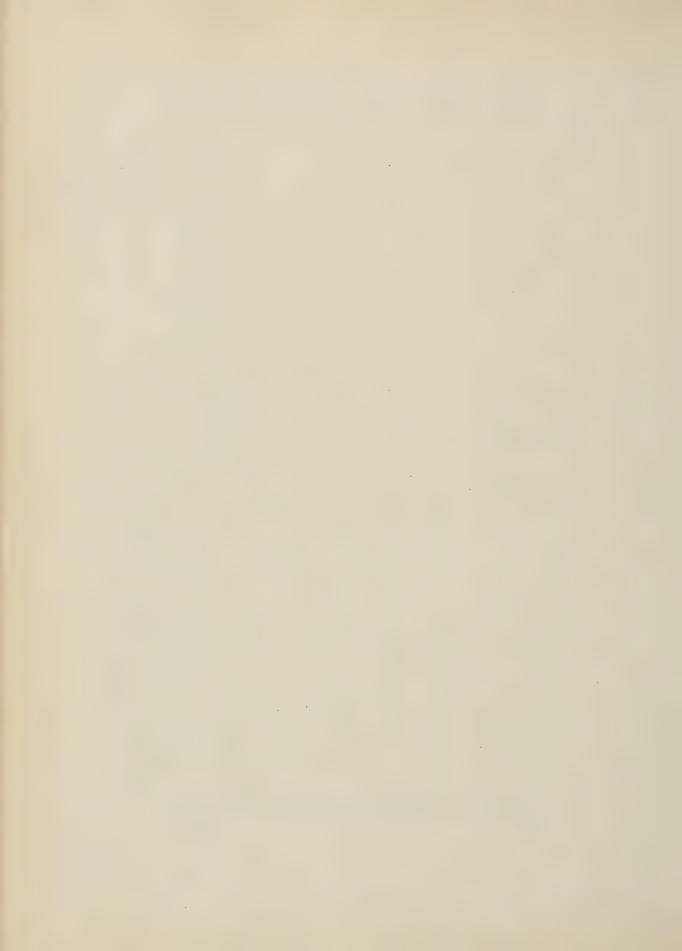
As indicated by weekly adult and larval collections made, DDT aerial spray, applied at a rate of 0.2 pounds DDT per acre, residual effects were obtained for as long as six weeks. Spray falling on bushes, leaves and open ground also acted as an insecticide, killing adult mosquitoes which might be resting in these areas.

DDT sprays, applied by knapsack sprayers or mechanical spray units, to the interiors of barracks at bi-monthly intervals were effective in killing adult mosquitoes that find their way into buildings. In addition to spraying buildings on the posts, residual DDT spray was also applied to huts and homes in native villages and towns neighboring the posts. This was an effective measure against mosquitoes which might carry the malaria parasites from infected civilians and natives to the military personnel. This same procedure was also effective in preventing the spread of filariasis.

In addition to the environmental control measures, both temporary and permanent, individual control measures were stressed at each base. These became increasingly important as the strength at various posts was cut to the point where large scale environmental control measures were no longer economically feasible.



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# WAR DEPARTMENT Office of The Surgeon General Washington

## MONTHLY REPORT OF MOSQUITO CONTROL ACTIVITIES

STA	TION: FOR MONTH OF:		
		FOR MONTH	CALENDAR YR. TO DATE
1.	Clearing or Brushing a. Acres		
2.	a. Lineal feet		
3.	NEW DITCHING (Main ditches and laterals, no lining) a. Lineal feet		
4.	FILL a. Cubic yards		
5.	DITCH LINING PLACED  a. Lineal feet		
6.	AREA WATER SURFACE ELIMINATED  a. Acres		
7.	LARVICIDAL WORK  a. Gallons of bil applied  b. Pounds of Paris green mixture applied  c. Amount of other larvicide applied		
8.	LABOR DURING MONTH  a. Common (civilian) No. hours  b. Semi skilled (civilian) No. hours  c. Skilled (civilian) No. hours  d. "Other" labor (WPA, NYA) No. hours  e. Soldier labor, No. Hours	,	
9.	MOSQUITO PREVALENCE - SUMMARY (Detailed reports may be submitted separately)  a. Larvae  (1) Collections, total number  (2) Number of which contained malaria— transmitting mosquitoes		
	b. Adults (1) Collections, total number (2) Total number of adults indentified (3) Number of malaria-transmitting mosquitoes		
LO.	REMARKS ( Use back of page if necessary)		
ı.	DATE SUBMITTED SIG	NED	
		-	63



## MONTHLY REPORT OF MOSQUITO CONTROL ACTIVITIES (Reference: Sec I, Memo #34, Hq AntD, 8 Apr 46)

STA	TION:	_FOR	MONTH	OF:	
		,	FOR MONTH	CALENDAR	YEAR DATE
1.	CLEARING OR BRUSHING (Acres)				
2.	CHANNEL OR DITCH CLEANING ( lineal Feet)		• • • • • •		• • • • • • •
3.	NEW DITCHING (lineal Feet) (Main Ditches and Laterals Only; Unlined)		• • • • • •		• • • • • • •
4.	FILL (Cubic Yards)				
5.	DITCH LINING PLACED (lineal Feet)				• • • • • • •
6.	AREA WATER SURFACE ELHIMATED (Acres)		• • • • •		
7.	LARVICIDAL WORK				
	a. Gallons of Oil Applied				• • • • • • •
	b. Pounds of Paris Green Mixture Applied				
	c. Pounds of Pure DDT (100%) Applied				
	d. Gals DDT-Residual Effect Spray Applied				• • • • • • •
8.	LABOR DURING MENTH				
	a. Common (civilian) No Hours				• • • • • • •
	b. Semi-skilled (civilian) No Hours				
	c. Skilled (Civilian) No Hours		• • • • •		••••••
	d. "Other" Labor (PRRA, WPA) No Hours		• • • • •		• • • • • • •
	e. Soldier Labor, No Hours				*****
9.	MOSQUITO PREVALENCE (SUMMARY)				
	a. Larvae (1) Collections, Total Number				•••••
	(2) Number collections which contained Malaria-transmitting mosquitoes				
	b. Adults (1) Collections, Total Number		• • • • • •		• • • • • • •
	(2) Total Number of Adults Identified				
	(3) No of Malaria-transmitting Mosqs				• • • • • • •
10.	RAINFALL (In Inches)	1			
11.	REMARKS		• • • • • •		
12.	DATE SUBMITTED SIGNED	-	and a section		



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#### Malaria:

A total of 1,255 cases have been admitted up to 1 October 1945. No deaths have occurred. The standard atabrine treatment recommended by current medical bulletins has been employed. Reactions to atabrine when administered by mouth have been seen in very few cases. These consisted mainly of abdominal discomfort or pain and anorexia. No mental reactions are recalled. When atabrine was given intramuscularly to cases in which vomiting was prominent symptom, a systemic reaction was observed in two individuals. This was characterized by swelling with subcutaneous edema at the site of the injection (buttocks). The reaction appeared following defervescence after the 5th and 6th day of therapy and was accompanied by fever and leukocytosis. No abscess formation occurred.

Investigations concerning the action of atabrine in one large single dose (1 gm.) intravenously in saline, on the parasite index and length of symptom-free period following the administration of the drug were carried out in 1944. Bone marrow studies prior to, during, and following treatment were done also. A few severe immediate reactions characterized by marked abdominal pain and sensation of impending death were observed following administration of atabrine as mentioned above.

#### Enteric Diseases:

It was the general impression that although these were characterized by the usual explosiveness and discomfort to the patient, the various conditions were readily controlled by the drugs at hand. No critically ill patients were observed and no deaths occurred.

One brief bacillary dysentery (Newcastle type) epidemic was encountered in May 1942 on the post of Fort Brooke. Five diarrhea cases, two of which were positive on culture, were admitted to this hospital. All the personnel of the detachment to which these patients belonged (300 men) were cultured and 38 were found to be positive for the same strain of bacillary dysentery. It was the opinion of the Commanding Officer of the Puerto Rican Department Laboratory that this was a man to man spread after the introduction of a positive case to the barracks, which case had been infected from an outside source. Upon treatment of these cases and carriers with sulfaguanadine, all were cured and rendered carrier free. 7

Helminthic Diseases: (Schistosomiasis and Filariasis excluded).

Intestinal parasitism has been found in about 80 percent of native Puerto Rican soldiers. In a group of 150 Puerto Rican enlisted men studied at this hospital the following parasites were encountered: Trichuris trichiura in 55 percent of the cases; hookworm in 45 percent and strongyloides stercoralis in 12 percent of the cases. Although hookworm disease with its associated severe anemia is occasionally encountered among the civilian population of Puerto Rico, no cases are recalled of severe anemia secondary to hookworm infection among Puerto Rican soldiers. An explanation of this fact may be as follows: (1) The presence of light and moderately severe infection with the parasite; (2) adequate amount of protein provided in the enlisted man's diet; (3) resistance and immunity to a chronic infection probably acquired during childhood or adolescence; (4) interest of medical officers in treating the infection.

Infection with strongyloides has been treated with gentian violet with variable results. This drug when given by the usual route (oral) and in standard doses is not believed to be more than 50 percent effective in the treatment of this helminth.

Ascaris lumbricoides infections have been few and hexylresorcinol cristoids have been employed.

An article entitled "The Blood Picture in Asymptomatic Schistosoma Mansoni and Other Intestinal Parasitic Infections" by Z. T. Bercovitz, Harry Shwachman, and R. Rodriguez-Mokina discussed the blood changes observed in Puerto Rican soldiers infected with several inteatinal parasites. A summary of the report follows:

- (1) A study of the blood picture was made by 147 Puerto Rican young men who had no clinical symptoms but in whom the infection with Schistosoma Mansoni as well as other intestinal parasites such as hookworm, trichocephalus trichiurus, strongyloides stercoralis and ascaris lumbricoides were found on routine fecal examination.
- (2) There were 17 individuals infected with S. mansoni alone. In this group 5 had leukocytosis and 6 had eosinophilia. The highest count was 14 percent and there were 3 persons who had no eosinophiles.
- (3) The only alterations from normal in the remainder of the group were increases of varying degree of the percentages of eosinophiles and slight leukocytosis. The highest eosinophilia was 30 percent. The highest counts being in those in whom there were S. mansoni, hookworm, and T. trichiurus. There were 17 individuals of the 147 studied in whom no eosinophils were found.

(4) In spite of the various parasitic infections present in the group of 147 young men, the blood picture shows a striking resemblance to the blood findings in 450 healthy Puerto Rican males who were free from intestinal and blood parasites.

#### Schistosomiasis:

Infection with the trematode worm Schistosoma mansoni which is the etiological agent of the disease known as Schistosomiasis mansoni or Intestinal Schistosomiasis, was reported to have occurred in 531 Puerto Rican soldiers admitted to the 161st General Hospital from January 1942 to 1 October 1945. No other varieties of Schistosoma worms are found in Puerto Rico.

A review of the total number of cases of Schistosomiasis mansoni admitted to the Station Hospital, San Juan (161st General Hospital), Puerto Rico from January 1, 1941 to March 29, 1943 inclusive is hereby summarized:9

1941 23 cases 1942 49 cases Jan 1, 1943 to Mar 29, 1943 9 cases Total 81

The total of 81 cases comprises 80 Puerto Rican patients and one Continental patient. In this series of 81 cases there was one death, which occurred March 6, 1943.

Thirty-three or 40.7 percent of the cases were admitted with Schistosomiasis mansoni as the primary diagnosis, forty-eight or 59.2 percent of the cases were admitted for other reasons and Schistosomiasis was an incidental finding.

The length of service in this group of 81 cases varies from a minimum of 3 days to a maximum of 26 years. The average mean length of service is one year and four months for the entire group.

It is the opinion of some competent authorities that infection with Schistosoma mansoni is present in about 20 to 25 percent of the rural population of this Island. A survey conducted among Army inductees and based on only one stool examination revealed an incidence of this parasite in about 10 percent of individuals. The condition is widely disseminated throughout the Island, as the intermediate host required for the transmission of the disease from one

person to another, a fresh water snail (Planorbis) is found in brooks, rivers and in ditches and canals employed in the cultivation of sugar cane. Chronic invalidism and death are frequently observed in individuals suffering from the advanced and late stages of the disease. Fortunately it is felt that the great majority of cases studied at the loss General Hospital harbored either light or moderately severe infections. Cases with clinical evidence of severe liver damage (cirrhosis), splenomegaly, and anemia (Banti's syndrome) were few and were separated from the service. Those cases showing persistent positive stools for ova following repeated therapy with fuadin, and in which symptoms referable to Schistosomiasis persisted in spite of therapy, were also separated.

One hundred and fifty-five (155) cases admitted in 1944 were used as basis for study in a paper entitled "Studies of Human Schistosoma Mansoni Infections - Proctoscopic picture in asymptomatic Schistosomiasis mansoni infections" by Lt. Col. Z. T. Bercovitz and associates.10

One hundred and fifty (150 other cases admitted during 1943, 1944 and 1945 comprised another article still unpublished, titled "Fuadin Therapy in One Hundred and Fifty Cases of Schistosomiasis Mansoni Following Study in Sixty Cases." Summary and conclusions follow:

- (1) Fuadin was employed in the treatment of 150 Puerto Rican soldiers with Schistosoma mansoni ova in their stools.
- (2) No cases of Schistosomiasis mansoni were encountered in North American troops stationed in Puerto Rico.
  - (3) Fifty or 33 percent of those treated were asymptomatic.
- (4) The frequency of various signs and symptoms encountered in the remaining 100 cases are presented.
- (5) The drug was given in courses of 45 cc. each, comprising a total of 10 intramuscular injections. The first 3 injections of 1.5, 3.5, and 5 cc. each, were given on successive days and the remaining 7 injections on alternate days.
- (6) Toxic reactions of a mild degree occurred in 18 or 12 percent of the cases. Two patients developed constitutional reactions.
- (7) The immediate effect of therapy employing 5 consecutive negative stocks after completion of a course is as follows: 114 cases or 76 percent negative after 1 course; 21 or 14 percent negative after 2 courses; and 15 or 10 percent positive after 2 courses.

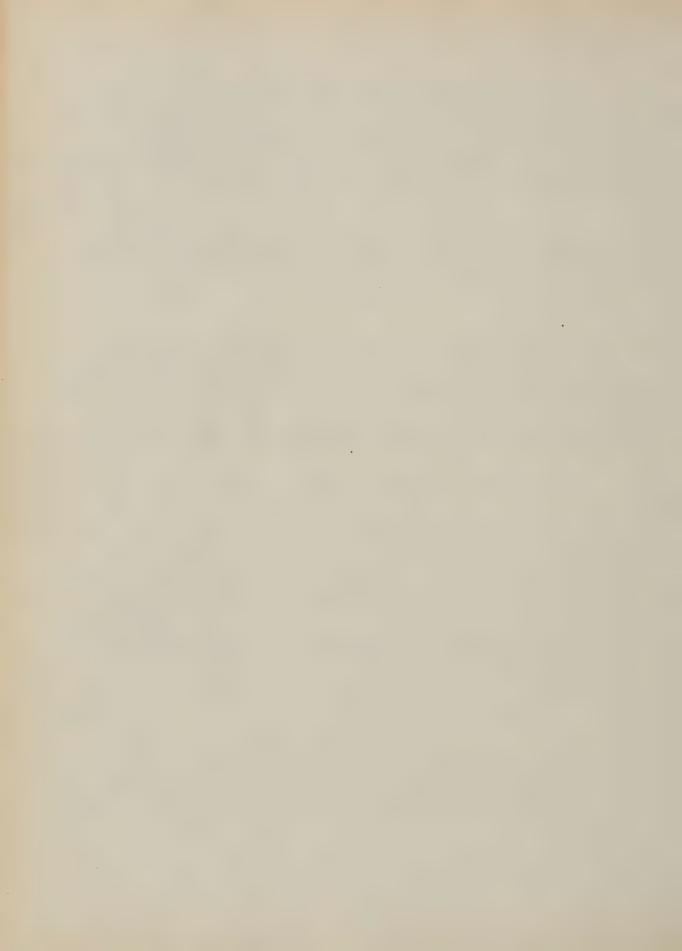
- (8) Follow-up observations for a period of 1 to 15 months after treatment reveals 33 individuals or 55 percent with negative stools (at least 5 specimens examined on each case). Three continued to have complaints, the remaining 30 were asymptomatic. Twenty-seven men or 45 percent continued to pass Schistosoma ova after treatment. Ten men or 16.7 percent were asymptomatic, whereas the 17 others or 28.3 percent who had positive stools had complaints.
- (9) Fuadin is not a very efficient drug in the treatment of Schistosomiasis mansoni in the chronic stage as determined clinically and by the presence of ova in the stools. The search for other and more effective remedies should be encouraged.

#### Filariasis:

The incidence of filarial infection in Puerto Rican soldiers has been estimated about 3.5 percent but the incidence of proven filarial disease has been rare. This subject has been extensively discussed in a report by Z. T. Bercovitz and H. Schwachman entitled "Filarial Survey Among Puerto Rican Young Men" which has been presented for publication and approved by The Surgeon General's Office. Microfilariae bancrofti has been the only filaria encountered.

## Typhus:

Typhus fever, murine type is the only Rickettsial disease encountered at the 161st General Hospital and a total of 8 cases were observed from 1942 to 1 October 1945. No deaths occurred. In contrast to the relatively low incidence of typhus in this area among Army personnel, the number of cases reported from the civilian population of the Island of Puerto Rico has increased since 1940 and the incidence of death has been about 5 percent. The cases of typhus observed at this hospital were treated symptomatically; sulfathiazole in 1 case; sulfanilamide in 1 case; penicillin (850,000 units) in 1 case, and sulfadiazine in another, were employed without signs of improvement.



#### HENRY BARRACKS

Venereal Disease:

During 1941 there was a total of 74 cases of venereal disease, with gonorrhea 44, syphilis 23, and chancroid 7. In 1942 there were three prophylactic stations, one in the 25th Field Artillery Area, one in the 162nd Field Artillery Area, and one in the town of Cayey, P. R. All stations were manned by Medical Department personnel. Until 17 September 1942, a prophylactic station in the town of Caguas, P. R., was also manned by the Medical Department personnel from this Post since the town was a frequent source of contacts. On the above date the duties concerned with the maintenance of this station were assumed by the Medical Department, Camp O'Reilly.

Other methods of venereal disease control were:

- (1) Periodic personal hygiene lectures by company officers.
- (2) Periodic personal hygiene lectures and films shown by Medical Officers.
- (3) Compulsory prophylactic treatment for all men returning from pass intoxicated.
- (4) All men returning from pass must report to the prophylactic station and either take a prophylactic or certify that they have not had intercourse.
- (5) All men going on pass were afforded the opportunity of obtaining condoms from the charge of quarters. The condoms were tested periodically by the Medical Department.
- (6) All known contacts have been reported to the Public Health authorities.

During 1943 the above measures for the control of venercal disease were supplemented to include the proper technical instruction of all prophylactic men in the procedure to be followed in the administration of sulfathiazol in the prophylaxis of gonorrhea. Also Medical Department enlisted men doing charge of quarters duty were concerned with the preparation of reports made by soldiers returning from pass denying to have had sexual intercourse. A register book was kept for that purpose. In addition to the three prophylactic stations already in operation, another was opened at the Salinas Training Area, Salinas, P. R., in September 1943, as this town was a frequent source of contacts. This station was manned by Medical Department personnel of this Post.

A total of 112 cases of venereal disease of all types were reported in 1943. Contacts were reported to Public Health units, which hospitalized them.

The 296th Infantry Bn. arrived from Panama 4 April 1945 and was given a 30 day furlough. Smears were taken which revealed 9 cases of gonorrea and 4 cases of syphilis.

#### Malaria:

During 1941 there was an epidemic of malaria with a grand total of 113 cases with 14 recurrent cases. Troops were on maneuvers in the Salinas Area during the high rate of malaria.

The Malaria Bureau, which was composed of both military and Insular Health Department officials as early as 1940 helped to control mosquito breeding in extra military areas. In combating malaria, blood and spleen surveys of populations residing within the mosquito flight range of the post were made with free drug treatment administered to those individuals found infected with malaria parasites. Drainage systems were installed in local areas to prevent mosquito breeding.

It is maybe that a large contributing factor to the high malaria rate of 1941 was the low level of military discipline obtaining at that time.

In 1942 screening of the post was almost 100%. Malaria discipline was tightened and all personnel were required to use mosquito bars at all time. The malaria problem was at a minimum since the number of anopheles mosquitoes was less than 1%.

In 1943 mosquito control was maintained by proper drainage and by oiling.

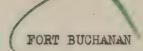
#### Filariasis:

Microfilariae smears were made on all Puerto Ricah personnel on 1 June 1945 with 3 positive.

#### Schistosomiasis:

In 1945 smears and stools were taken on Boy Scouts who were using the swimming pool, but of 22 individuals examined 21 were positive. Therefore the practice of allowing Boy Scouts and other civilians the use of the swimming pool was discontinued.

Since the malaria epidemic in 1941 there has been no epidemic on this post.



#### Venereal Disease Control:

Venereal Disease Control on the Post may be considered under the following heads:

I - Moral

II - Recreational

III - Educational

IV - Medical

V - Disciplinary

VI - Suppression of Prostitution and Case Finding

#### I. Moral:

The fact that continence and self-control are the best and only sure method of prevention of venereal disease has been emphasized as a fundamental of the VD Control Program by all concerned. The value of moral purity has been pointed out in talks by the Chaplains and given further emphasis by the example and admonition by Commanding Officers of all grades, in periodic appeals to men of all organizations.

#### II. Recreational:

Improvements in recreational facilities and encouragement of participation in sports, educational programs and supervision social activities have played an important part in providing use for leisure time and a needed outlet for physical and mental energy which might have led in many cases to sexual adventures had these outlets not been provided. The stimulation of interest in making a home for the enlisted men in their own quarters and dayrooms has decreased the urge to go to town and forget the Army for a while. All these activities are to the credit of Commanding Officer, Company Officers, and the Special Service Organizations of the Post.

#### III. Educational:

The burden of the Educational Program has been distributed among a wide number of persons and carried on in a variety of ways. The Post Venereal Disease Control Officer has been principally charged with supervising it, providing materials and training other instructors. The purpose has been:

(1) To acquaint every man of every organization on the Post with the essentials of what the various venereal diseases are, their effects on the human body and possible results of neglecting treatment.

- (2) To make sure that every man knows how to avoid these diseases by continence or by the use of prophylaxis if he is exposed.
- (3) To acquaint all men with the facilities provided for their protection in the prophylactic stations and hospitals.

To provide this instruction a variety of methods have been used. Films provided by the Signal Corps and by the U. S. Public Health Service have been shown periodically to members of all organizations. Formal lectures have been given at frequent intervals by the Venereal Disease Control Officers and battalion surgeons. Company officers have given regular and frequent talks to men of their units. The most recent and probably one of the most successful methods has been the appointment of non-commissioned officers as leaders of small groups to which they give weekly instruction on some phase of the subject. These men are given special instruction by the medical VD Control Officers and tested on their knowledge by written examinations. A definite time is set aside by the companies for this instruction and additional material is provided by the organizations! VD Control Officers.

An additional helpful method of constantly keeping the facts of VD before the men's eyes has been by posters provided by the Surgeon General's Office and by printed material from this office and several very valuable pamphlets in Spanish from the Insular Department of Health.

### IV. Medical: Purely medical measures are:

- a. Regular monthly and other physical inspection of troops.
- b. Examination of all civilian personnel employed on the Post, particularly the monthly examination of female domestics.
- c. Prompt treatment and follow-up of all cases discovered.
- d. The establishment and operation of prophylactic stations.

Prophylaxis is operated by specially trained men of the Station Hospital Medical Detachment and the Dispensaries. A station was established in the nearby town of Bayamon in October 1942. In May 1943, three new stations were constructed at the three gates of the Post, Main, South, and West, and in the following month 269 treatments were given at these stations. An officers' pro-station was added in May 1944 in the Station

Hospital, bringing the total to eight stations. Beginning in April 1944, the patronage of these stations dropped off to 40 per month and has continued low. This is attributed to the opening of other stations nearer the source of contact, and for this reason is not considered a serious loss to the program. Sulfathiazole pills have been used as adjunctive treatment in the pro-stations since November 1943, but only 51 cases adequately observed and reported the effect of their use, and the results cannot be accurately judged.

### V. Disciplinary:

In December 1943 the "Pro-Pass Book" was first instituted in an attempt to provide a check on the men who were not utilizing prophylaxis. Disciplinary action has been taken in a number of cases where men have failed to report an exposure, but there is still a tendency for men to be reticent. Following the discontinuance of the operation of AR 35-1440 in VD cases, an attempt was made to add the stimulus of group censure and loss of privileges. The leader is responsible for his group's instruction under the supervision of the VDCO, and all men of the group are subject to 30 days loss of pass privilege if one contracts an infection.

## VI. Suppression of Prostitution:

This, one of the most effective methods of reducing VD rate, must always depend upon cooperation of civilian health authorities. It can be stated that in general this cooperation has been extremely good. It was highlighted by the visit to the Post in February 1944 of Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service.

#### · Post Venereal Disease Control Officers

December 1942
July 1942
May 1943
October 1943
November 1943
January 1944
April 1944
June 1944
June 1945

Capt. V. J. Montilla
Major E. Garrido Morales
Capt. Herman Winkelman
Capt. Juan Basora Defillo
lst Lt. J. G. Sugranes
lst Lt. H. Vazquez Milan
Capt. E. L. Matta
Capt. Philip M. Reilly
Capt. Donald E. Babb

#### Malaria Control:

In order to present the malaria problemll which existed at Fort Buchanan when military activities began after the outbreak of war,

it is necessary to elaborate on the physical aspects of the area. The section to the north was very swampy, and in order to establish the Naval reservation and the Army Terminal on the available ground, hydraulic filling operations were begun. By this process, bottom sediments with large amounts of water were pumped from San Juan Harbor. The solid material was allowed to settle, and the disposal of the excess water became a serious problem. Drainage from the entire Post area was practically blocked since no satisfactory outlet to the harbor existed. During heavy rainfall, many swampy areas existed within the Post. To the north of the cantonment, opposite the Ordnance area, a large swamp existed, and where no swamps were present, canefields with their network of irrigation ditches which created mosquito-breeding spots were found. To the east of the Post was Brugal Swamp, a potential mosquito-breeding area. In the west of the cantonment was Barrio Santa Ana, a community in which many malaria carriers were residing. 12 Also within flight range of the A. albimanus were Barrio Juan Domingo, Villa Caparra, and a small portion of Bayamon, where some malaria carriers may also have been present. Aggravating the generally serious malaria problem was the creation of many man-made mosquito-breeding places as a result of railroad. warehouses, roads, and other constructions.

From the preceding paragraph it can be readily realized that anopheline mosquitoes, as well as pest mosquitoes, at this Post were very prevalent due to poor drainage conditions. The source for infecting the anopheline mosquitoes was very near to the cantonment due to the presence of carriers in the communities adjacent to the Post. Since the physical examination for military personnel did not include malaria smears, many soldiers stationed at Fort Buchanan may also have been malaria carriers. A glance at the malaria rates for the months of 1942 will readily convince anyone of the problem. Malaria rates are computed as follows:

(No. of cases) X 1000 = Malaria rate/1000 (During month) x troop strength men/year.

Therefore, two cases per month for a troop strength of 1000 men means a malaria rate of 24 per 1000 men per year. In 1942 the malaria rate for the year was 122 which corresponds to 793 cases occurring. In 1943 a total of 104 cases of malaria occurred, while in 1944 there were only 19 cases. One item should not be overlooked; the fact that all troops assigned to this station were considered in computing the rates and cases. This means that during 1942, many troops assigned to the Post were not actually quartered here, since they were stationed at various searchlight and anti-aircraft positions outside of the control zone

The initial approach to the problem consisted of study and planning by members of the Medical Department and the Corps of Engineers. The problem was so serious that time would not permit waiting for improvement of the drainage. Hydraulic fill operations were not complete at the Army Terminal. Funds had not been provided for such an extensive drainage program, and it would have taken much time to improve drainage conditions to eliminate mosquito-breeding areas. The Insular Health Department began the construction of sub-soil drainage in the head waters of El Toro Creek in February 1942. However, as far as drainage improvement was concerned within the Post only minor ditching was performed. The Insular Health Department was also in charge of larviciding the many cane fields and marsh lands in the vicinity of the Post.

In May 1942, however, malaria control operated more or less separately in the cantonment areas. Two enlisted men from the Medical Detachment and eleven W. P. A. laborers were assigned as a malaria control team. They were engaged in paris-green larvicide dusting throughout the Post and Army Terminal Area, using dusters furnished by the U. S. Public Health Service. Also during May plans were made for providing properly screened quarters, to secure grass cutting crews to eliminate vegetation from drainage ditches and from edges of swamps, to conduct blood smear surveys to locate malaria carriers, to conduct an extensive educational program. It was felt that these plans were the only ones feasible since drainage improvements would be slow and we could not rely on larvicidal control measures alone.

In July 1942 regular inspections were instituted for all organizations on the Post. Each barrack in every organization was inspected, and the organizations were rated or scored on the following items: doors, screening, presence of adult mosquitoes, use of mosquito bars, and cooperation with the control program. (The included inspection form was used.) At the end of each month the Post Engineer crews were at work mosquito-proofing barracks, but due to the lack of screen wire because of other demands and shipping, this program was somewhat delayed. The drainage of the Terminal area was somewhat improved by the construction of a temporary drainage ditch near Catano. This ditch drained a mangrove swamp which in turn drained the Army Terminal swamp. Also during the month the United States Public Health Service enlarged their crews and took over the larvicidal program within the cantonment.

Malaria control among enlisted men and officers involved careful application and enforcement of regulations pertaining to bed-nets, drainage and other factors connected with successful control of the disease. With the approach of the rainy season and the consequent increase in malaria-transmitting mosquitoes and the pest variety, all

## STATION HOSPITAL Office of the Surgeon Fort Buchanan, Puerto Rico

		Date:		
MEM	0: -			
TO	° co	Commanding Officer, Fort Buchanan, P. R.	,	y 1
Co.		In compliance with orders the undersigned has this		
			SCORE	
	a.	Doors and Windows: - Kept closed		
		Properly Adjusted	CONTRACTOR OF THE PARTY OF THE	
	ъ.	Screening: -		
		Tent or Barracks frames and		
		screens in good repair		
	c.:	Adult mosquito control: -		
		Insecticide sprayers	CZ::-*Days and producing analysis productions	
		Supply of Insecticide	Old Tribuse, here it movied believe on	
	d.	Larval mosquito control: -		
		Oiling of places near barracks		
		which contain water as fire		_
		barrels, ditches etc.		
	e.	Presence of mosquitoes		
		(None, few, many)		A STATE OF S
	e			
	f.	Mosquito Bars:		
		Properly used In good repair	C. II.	
	g.	Headnets and Gloves for sentinels, labor		
	P.	details, and drivers at night		
	h.	Willingness to cooperate with the		
	*.	malaria control program	onf:	
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DEFI	ECTS	NOTED: -		

commanders were directed to exercise proper malaria control measures within their organizations. The measures were outlined in a memorandum from Post Headquarters, entitled, "Malaria Control." The memorandum contained provisions for the appointment of anti-malaria details, instructions on malaria to enlisted men, the use of bednets and aerosol bombs, and the proper care of screens in barracks and kitchens. It was ordered that torn bed-nets and screens that contained holes were to be reported and repaired at once. The aerosol bombs were particularly effective in ridding buildings of ants, roaches, flies, mosquitoes, and other insects.

In August 1942, the malaria rate continued to be excessive even though every effort was being made to destroy the anopheline larvae by paris-greene larvicide, by providing proper mosquito-proofed quarters, and rigid supervision of organization malaria control measures by the Post Medical Inspector and Post Malaria Control Officer. Blood smear surveys were made of all troops who had malaria during the previous months to determine whether carriers existed. Checks were made of barracks to determine what mosquito-proofing defects needed correction, so that the Post Engineer could send his crews to make necessary repairs. The first strictly malaria control allotment of \$19,000 per quarter was secured to eliminate "man-made" mosquito breeding areas. The Insular Health Department completed the El Toro Creek project which was begun in February.

The great drop in malaria at this Post in September 1942 from 148 to 64 was probably due to the mosquito-proofing program and the cooperation of the unit commanders in the Post Malaria Control Program.

During October 1942 the Post Engineer began the Post drainage improvements program with funds alloted quarterly. The mosquitoproofing program continued, and the larvicidal program increased. A new phase of malaria control was initiated in December, when plans for a permanent malaria control project were submitted for approval. This project, estimated to cost \$292,000 was to include filling and grading of low areas, and the placing of concrete linings in the earthen ditches. While waiting for this project to be approved by higher headquarters, various epidemiological surveys were conducted. blood smear survey was made by members of the Antilles Department Medical Laboratory13 at the Colonia Santa Ana community which revealed many malaria carriers. As a result of this study the residents were evacuated during September 1943 to a new location. A study was also made to determine the manner in which the troops at this station had contracted malaria. This study revealed that more than 50 percent had been on guard duty at night, and corrective measures were recommended.

During January 1943 work was begun on the large canal from the Army Terminal to San Juan Harbor with the outlet west of Catano.

This project, costing \$94,000, was recommended during November 1942. However, construction could not be begun until the hydraulic filler had been completed and consolidated. Work continued on this project until May 1944, when it was completed.

In order to discharge normal water flow into the harbor and to prevent tides entering into the swampy areas a large pumping station having a capacity of 90,000 gallons per minute was constructed at an estimated cost of \$75,000. This project has been very instrumental in maintaining a low malaria rate at the Post. Since this drainage system has been placed into operation, many acres of mangrove swamps and stagnant waters have been eliminated, and the drainage system of the Post has been satisfactory even during excessive rainfall.

During April 1943 paris-green larviciding operations by airplane was begun over Brugal swamp, located east of the camp.

During May 1943 freon aerosol bombs and repellent No. 612 were made available to troops. Due to the ease in which the insecticide could be applied, more efficient spraying of barracks was possible.

From January until June 1943, malaria control was principally temporary in nature, but in June the Post Engineer obtained \$14,640 under PEMO 359 for replacement of 17,900 cu. yds. of fill, and to construct 3,900 feet of 12 1/2 inch concrete ditch lining in the general Depot of Army Terminal area. But work on this project was delayed due to the shortage of trucks.

From June until September 1943, routine malaria control measures continued in effect. Barracks continued to be inspected monthly and temporary ditching and the larvicidal program continued.

During September 1943 the work on the permanent malaria control drainage project began. Concrete Panama type inverts, side slabs and half round concrete tiles were constructed by the U. S. Public Health Service at their Rio Piedras warehouse on a material replacement basis and hauled to APO 846, where Post Engineer and W.P.A. labor made necessary excavations and placed the concrete linings. In addition to lining of ditches, many fill areas were completed. By the end of November 1943, due to lack of funds, the project was suspended, but in April 1944 a request was made for \$41,702 for the purpose of completing the ditch lining and fill projects. This project had not been approved up to early 1945.

In October 1943 three enlisted men were assigned as Malaria Control Technicians to assist eht Post Malaria Control Officer, as entomologists in the larvicidal program and also to secure "Adult Mosquito Indices in Barracks" and "Mosquito-Proofing Indices." (Forms used were as those included.) To secure "Adult Mosquito Indices in Barracks" the enlisted men would spray weekly ten barracks scattered throughout the Post during the early morning hours and collect the dead mosquitoes. The mosquito proofing indices were determined by checking barracks for holes and cracks in walls and floors, defective windows and doors, and number of torn bed-nets. This program, was continued until 1 October 1944. In addition to carrying on this program, the Malaria Control Technicians assisted in checking mosquito breeding areas and in the Malaria educational program.

Ever since the first quarterly allotment of \$19,000 was made in August 1942, similar allotments have been made continuously, however, in gradually smaller amounts. In the beginning the funds allotted were used for minor filling, new ditching, ditch maintenance, and mosquito proofing of barracks. However, from March 1944 the funds were allotted to carry on the continuous larvicidal program within the Post, and ditch maintenance expenditures were to be obtained from ground maintenance funds. In view of the fact that it was decided in March 1944 to make an effort to control both anopheles and culicine mosquito breeding within the Post, the U. S. Public Health Service discontinued paris-green larviciding within the Post, and larviciding with oil was begun by Post Engineer labor and supplies. This program. though effective against both types of mosquito breeding within the Post, did not mean that pest mosquitoes would not continue to invade the barracks, since pest mosquitoes were not controlled outside the boundaries of the Post by paris-green dusting. Larvicidal control by means of diesel oil is very expensive when controlling the large areas necessary for A. albimanus. To control this species it is necessary to larvicide all stagnant bodies of water found within approximately 22,000 acres. Within the boundaries of this station there are approximately 1900 acres, and when diesel oil alone was applied, some 950 gallons were used monthly. Since it was felt that a considerable saving of diesel oil was possible by producing a diesel oil-maker emulsion in the Chemical Warfare Service Decontamination Unit and applying the emulsion as the larvicide, this practice was begun in September 1944. However, it was found that the emulsion was not as effective as desired, and instead of using one drum diesel oil, to three drums of water in preparing the emulsion, one-half drum diesel oil, one-half drum kerosene, and three drums of water was experimented with and continues to be used at the present time. Results have been as . effective as if diesel oil alone were used, and the amount of oil has been reduced 75% by this emulsion larvicide. On several occasions DDT has been added to the emulsion, but no outstanding results have been obtained.

During 1944, no outstanding accomplishments have been made with the exception that malaria among troops at this station has been kept at a low level by close supervision of the larvicidal program, proper maintenance of lined ditches, and cooperation of organizations stationed here. The malaria rates for 1944 have never been more than 12, and during three months no malaria occurred.

In 1945, eleven laborers and one foreman employed and administered by the Post Engineer were performing the larvicidal activities. Two of these men, assisted by the Malaria Control Technicians. worked ahead of four men operating sprayers, checking all bodies of water within the cantonment for mosquito larvae. When larvae. anopheles or culicines were found, a small white flag was placed in the body of water; these areas were then thoroughly treated by the sprayer operators, who also treated all bodies of water even though no larvae were found in them. Several hours after the spraying operation, the "flagged" areas were again checked by the Malaria Control Technicians, and if no live larvae were found, the flags were removed. In order to minimize the amount of larvicidal treatment necessary and to secure more efficient treatment, five laborers are engaged in cleaning vegetation from the unlined ditches, and minor ditching. Formerly it required five days to completely larvicide the Post area, but on many occasions the work has been completed in three or four days.

With this small crew of laborers, vegetation was cleared from the large dragline constructed channel, heading near the Army Terminal, and reconditioning the channel of El Toro Creek.

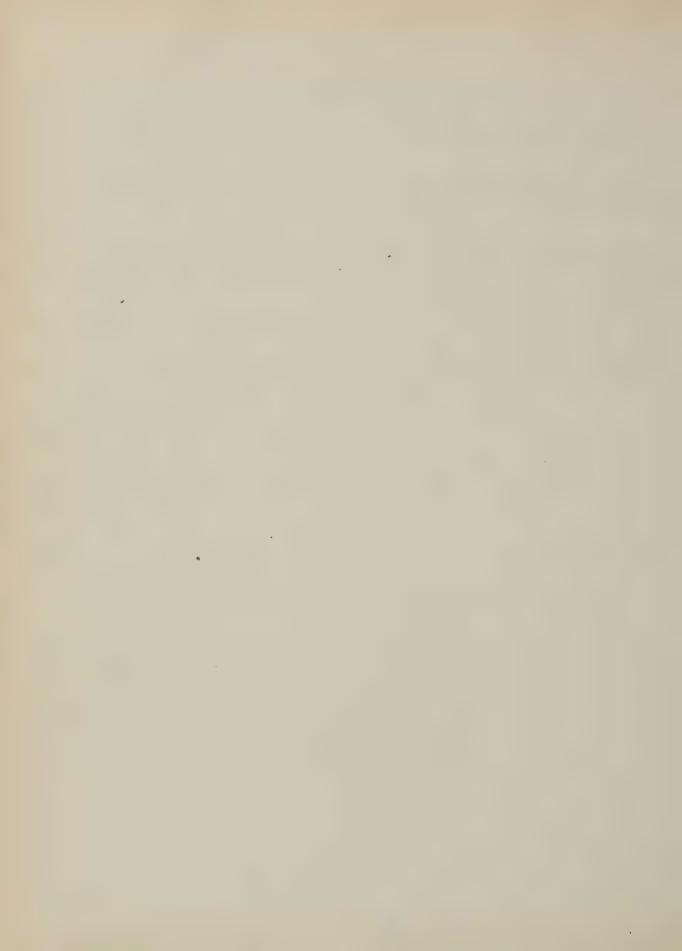
Recently the Army Terminal, El Toro Creek, Ordnance, Radio Stations, Incinerator, and Post Garden drainage areas have been greatly improved.

The following data, though incomplete, will give some indication of the amount of work done:

- 1. 877.8 acres of land cleared or brushed.
- 2. 98.1 miles of channel or ditch cleaned.
- 3. 12.7 miles of new ditching constructed.
- 4. 32,000 truck loads of fill (3 cu. yds. each).
- 5. 4.5 miles of lined ditching constructed.
- 6. 112 drums of oil applied.
- 7. 61 tons of paris-green mixture applied.
- 8. 44 men have worked each week for the 3 years period (av.).
- 9. 2,196 larvae collections made.

# Malaria Control Officers

Capt. Harry C. Greenfield, SnC Sanitary Inspector	25 June 1941 - 26 June 1943
Capt. Irving Fox, SnC Asst. Sanitary Inspector	24 April 1942 - 26 June 1943
Asst. Malaria Control Officer	26 June 1943 - 30 July 1944
Capt. Norman Winch, SnC Asst. Malaria Control Officer Malaria Control Officer	28 May 1943 - 27 August 1943 31 July 1944 - 18 September 1944
Capt. Henry L. Dabney, SnC Malaria Control Officer	6 October 1945 -17 February 1945
Capt. Wm. A. Moggio, SnC Malaria Control Officer	21 February 1945 to this date.



## Venereal Disease:

Previous to January 1945 all maids and waitresses who worked on the post were given complete physical examinations whenever the Post Command deemed it necessary but, since that date, examinations have been performed once a month. Any maid or waitress examined showing a positive smear for venereal disease was discharged immediately and her name submitted to the Public Health Officials.

Commendation was given the Medical Detachment of the 30lst Station Hospital by the Commanding General, Antilles Department on 25 April 1945, for maintaining a perfect venereal disease record for the past fifteen months.

Following is a monthly list of venereal disease cases and reports of activity by prophylaxis stations run by this hospital during part of 1945:

May

(a) Three cases gonorrhea and six of syphilis.

(b) Number of prophylaxes administered during the month

Ponce Pro-Station	78
Base Pro-Station	 135
Hospital Pro-Station	1
Total •	214

(c) The interior of the Ponce Pro-Station was painted white and two straddle sinks were installed.

June (a) Three cases of gonorrhea and six cases of syphilis charged against this station for the month.

July (a) Two cases of syphilis and no cases of gonorrhea charged against this station.

(b) Number of prophylaxes administered during July

Ponce Pro-Station Base Pro-Station Hospital Pro-Station	170 24
Total	237

- August (a) Two cases of syphilis and four cases of gonorrhea charged against this Station for August.
  - (b) Number of prophylaxes administered during August

Ponce Pro-Station Base Pro-Station Hospital Pro-Station	130 2
Total	214

September

- (a) No cases of syphilis and five cases of gonorrhea charged against this Station for September.
  - (b) Number of prophylaxes administered during September

Ponce Pro-Station		208
Base Pro-Station	• •	77
Hospital Pro-Station		0
Total		285

No records of venereal disease reports were found at this hospital prior to August 1944. Following is the post Venereal Disease rate by months:

	•	
Month	Year	Rate per 1000 per annum
August September October November December	1944 1944 1944 1944	26.54 57.82 72.63 96.63 6.32
January February March April May June July August September	The state of the s	19.45 74.26 38.70 56.12 24.52 38.07 0.00 26.21 30.28

The report indicated a sharp rise in the venereal disease rate from 26.54 per thousand per annum in August 1944 to 96.63 per thousand per annum in November of that year. At that time an educational program was instituted and the trend has been generally downward since then.

#### Malaria Control:

Very little information was available on malaria control measures at the 301st Station Hospital. However, some difficulty in choosing the hospital site was encountered, as specifications stated that it must be at an elevation of at least 300 feet above sea level on well drained land to lessen the mosquito hazard.

The monthly total of malaria cases for 1945 is as follows:

January	1	case
February	0	cases
March	0	cases
April	2	cases
May	1	case
June	1	case
July	4	cases
August	5	cases
September	5	cases
October	4	cases

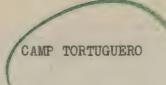
# Epidemics:

Late in December 1941 an epidemic of typhoid fever in the nearby city of Juana Diaz 4 threatened the health of the post. Up to December 27, 1941, there were 17 known cases of typhoid fever which had been reported officially, and there were at least 40 other diagnosed cases of typhoid which had not been reported to local health authorities. Definite steps were taken by the Juana Diaz Health Department to control the epidemic. Liquid chlorination of the water supply was begun, a chlorine residual of 0.2 to 0.5 parts per million being maintained. At the same time immunization with typhoid serum was begun. The populace was warned to boil all cooking and drinking water.

Drastic steps were undertaken at Losey Field to safeguard the health of military personnel. All personnel who had not had a typhoid series in the previous six months were innoculated. Juana Diaz was placed off limits and a warning issued to all troops against

eating or drinking anywhere outside the base. In addition, all food handlers working on the base and living in or near Juana Diaz were barred from the post for the time being.

An outbreak of typhoid fever occurred in Ponce, Puerto Rico, in August 1942.15 Approximately the same precautions were taken by civilian health authorities to stop the epidemic and by military authorities to protect troops as was done in the Juana Diaz outbreak eight months previously. No record of infection of military personnel is known.



General:

The Sanitary conditions present at the Post when the Army took over in October 1940 were far from satisfactory. It may be said, in fact, that they were considerably below minimum standards for an army installation. This section of the history will concern itself mainly with the demonstration of these conditions and the various remedial measures employed in combating them, so that the Post today, conforms to high health standards.

It will be recalled that Camp Tortuguero is in a highly endemic malaria area. The two towns in its close proximity have high malaria rates. Sanitation within these towns is very poor. Marsh lands and lagoons in the camp area were excellent breeding places for malaria bearing mosquitoes. The sandy soil whipped up by the almost constant winds gave rise to a very dusty atmosphere.

### Venereal Disease Problem and Control:

The Venereal Disease problem at this post has been complicated by the fact that the population is transient and not regularly assigned. The two main organizations on the Post, the Unit Training Center, and Replacement Battalion are in a highly fluid state as far as personnel is concerned. Thus it was difficult to properly inculcate the men into the habits of venereal disease control since many of them would be here for only a few days. In addition men shipping out overseas and those returning from overseas received their furloughs from this station thus making the problem more acute. In spite of this the venereal disease rate has shown constant improvement and has always stayed under the maximum limits set forth for the department.

Venereal Disease control became a major function of the Station Hospital with the advent of large numbers of troops into the Post. A Venereal Disease Control officer whose sole duty was VD control was assigned. Control consisted of education of the troops together with the control of sources of infection by cooperating with the local health authorities. Prophylactic stations were set up both on the post and in adjacent town areas.

Prophylactics, both mechanical, and chemical were made available to the troops. Four prophylactic stations were placed in operation. They are located at Vega Baja, Manati, Arecibo, and on the Post itself. These pro-stations are inspected regularly by medical officers. All information regarding contacts with enlisted men are forwarded promptly to pertinent civilian authorities. The Post VD Control Officer has held conferences with Public Health and Insular police officers and has conducted raids with their cooperation in all of the adjacent municipalities. Special agents have been assigned to this Post by the Insular police for the purpose of ferreting out suspicious women who loiter about the Post.

## Malaria Control:

Malaria control activities were intensified immediately. Malaria discipline was taught to the troops and a constant check for compliance was maintained. Anti-malarial details were organized and house-keeping measures carried out effectively. Insecticides and the use of screens and mosquito bars were taught. The quarters for troops at this post were in such poor condition that much maintenance was required. Activities in the intra and extra-cantonment areas which were carried out may be summarized as follows:

	Clearing and brushing:	1943	1944
a <sub>o</sub>	(1) Acres	573.87	106.43
ъ	Channel and ditch clearing: (1) Lineal feet	119,147	828,760
c.	New ditching: (1) Lineal feet	129,592	18,173
d.	Fill: (1) Cubic yards	20,799.7	98.5
е.	Larvicidal Work: (1) Gals. of oil	4,184	4,499

The control measures used in 1943 were the same put into practice in 1944. Mosquitoes were controlled by destroying their breeding places, killing the adults and preventing their entrance into the living quarters of troops. Ditching, drainage filling, application of larvicides and elimination or control of artificial containers of water are the means employed in combating breeding. Screening of all buildings occupied at night, spraying of insecticides and the use of mosquito nets are the measures employed in protecting the troops from the adult.

There have been 506 cases of malaria hospitalized at this station. The majority of cases have been of a mild variety and no serious complications have been encountered. The average period of hospitalization has been 6 days. The treatment was carried out according to the Surgeon General directives for the corresponding periods. It is interesting to note the marked decline in malaria hospitalizations with the succeeding years which is a reflection of the effective malaria control measures instituted at this post.

Year Number	of hospitalized cases	Rate
1941 1942	350 606	73 88
1943	105	19
1944 1945 (up to Nov.)	19	10

The venereal diseases have always been a major problem for this hospital. As was stated previously in this report this problem has been attacked vigorously from the start. A single medical officer whose sole responsibility is venereal disease control has been assigned to the task and extensive educational programs have been instituted.

## a. Syphilis

	Year	Number of Cases	Rate
	1941 1942 1943 1944 1945 (up to Nov.)	31 27 118 24 35	6 4 21 8 8
b。	Gonorrhea		
	1941 1942 1943 1944 1945	162 141 375 36 85	34 20 66 12 3

#### Enteric Diseases:

In all there have been 502 cases of enteric diseases which have received treatment at this Station. No deaths occurred. They varied

from the mild diarrheas to rather severe bacillary infections. There was a smaller percentage of acute amebiasis cases. No serious complications were encountered.

## Helminthic Diseases:

All patients upon admission to this hospital for whatever cause receive a routine stool examination. In cases where the presence of parasites is more strongly suspected, stools are run on the patient for three successive days. On other gastro-intestinal patients these examinations are run for much longer period until a definite conclusion is arrived at. The hospital population at this station is predominately Puerto Rican. As a result a very high percentage of the patients have one or more parasites on their stools. All hookworm cases were treated with tetrachlorethylene according to the Surgeon General's directive. A rather significant group of Strongyloides stercoralis cases were treated with Gentian Violet. Schistosomiasis cases were evacuated to the General Hospital for more definitive treatment.

#### Filariasis:

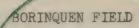
The experience with filariasis at this Station has not been large. There are on record only 25 admissions for this disease. This however, is not an index of the amount of filariasis present on the post for the vast majority of the cases were not hospitalized.

## Typhus:

There is no record of any admissions for typhus fever at this hospital. Since the presence of endemic typhus on this island is well known, and since it is known that the disease here tends to run a very benign course, it is logical to suppose that a small percentage of the undiagnosed fevers might have fallen into this group.

# Dengue:

There have been 17 cases of dengue fever hospitalized at this station. All cases occurred between January to May 1941 which seems to indicate that there might have been a slight epidemic of this disease at that time.



## Venereal Disease Control:

The incidence of venereal diseases among Army troops stationed at Borinquen Field since the year 1942 has shown a marked improvement up to the present time. The average rate for 1942 was 72 per 1,000 per annum, 1943 - 50 per 1,000 per annum, 1944 - 36 per 1,000 per annum, and for the first nine months of this year, 31.4 per 1,000 per annum.

## Contributing factors have been:

- 1. The high incidence of venereal disease among the civilian population. When local government agencies initiate a vigorous venereal disease control program for the civilian population, the Army program will not have to be all-inclusive. The suppression of prostitution, a civilian function, will, in the long run, make far lower Army venereal disease rates.
- 2. Cheapness of alcoholic beverages and consequent over indulgence in places where pick-ups are readily available.
- 3. Laxity in moral standards brought about by a number of conditions such as foreign environment where restraining influences of the individual's local or hometown society are not binding, nostalgia, prolonged stay in isolated places, and resentment against regulations.
- 4. Neglect of prophylaxis, brought about by a variety of factors such as drunkenness, ignorance, poor morale, and misplaced trust.
- 5. Ease of cure with penicillin which tends to abolish the sense of fear that has been connected with these diseases and results in increased exposure with disregard of prophylaxis.
- 6 Removal of administrative penalties for venereal diseases so that they are now considered as any other disease.

The non-effective rate (as days lost from duty) has shown a great decrease with the advent of new medications for the treatment of venereal disease. The non-effective rate for the year 1942 was 362, 1943 - 229, 1944 - 58, and 1945 (first nine months) 25. One important factor in the high non-effective rate in the early years was the prevalence of sulfa-resistant gonorrhea germs in the area, necessitating prolonged hospitalization.

For a period after the establishment of this Base, no organized attempt was made to control venereal diseases other than the sex hygiene lectures, the monthly physical inspections, as required by Army Regulations, and the maintenance of the ordinary provisions for prophylaxis. Because of the migration of prostitutes to the surrounding communities, the venereal disease rate among personnel of this Base became unusually high by October 1941.

In January 1942 the Venereal Disease Control Officer instituted an educational program which has been followed through by the present VD Control Officer. It has resulted in substantial lowering of the rate. An enlisted man was found with ability as a cartoonist and posters were made illustrating various phases of the problem. These have been distributed to all barracks and other meeting places of soldiers and are changed frequently. Military sources have supplied printed posters which have replaced those which were first produced locally.

Prophylactic stations were established both in and off the Base:

Intra-cantonment area

Dispensary A - opened in January 1942 and operated from 7:00 P. M. to 12:00. Number of prophylaxis taken here decreased because soldiers entering the Base in taxi cabs which brought them to the barracks did not want to get off for a "pro" and then have to walk to the barracks area which is about one and a quarter miles from the Main Gate. This station was discontinued 27 November 1944.

Dispensary B - opened August 1942, was in operation 24 hours daily, but because of decreased number of "pros" and decreased medical personnel, a change of hours was made 27 November 1944 to from 8:00 P.M. to 1:00 A.M. Because of further decrease of personnel, Dispensary B was closed 15 September 1945.

#### Extra-cantonment area

Aguadilla City Hall - opened April 1942 and operated 24 hours daily. With the decrease in the number of personnel, the number of "pros" taken at this station did not warrant its remaining open 24 hours and so on 27 July 1943 the hours were changed to from 1:00 P.M. to 12:00 M. With the still further decrease in personnel and "pros," the hours were again changed in August 1944. At present the station is open daily from 6:00 P.M. to 1:00 A.M.

San Sebastian - opposite City Hall, opened November 1942. Because of the few "pros" taken there this station was discontinued in June 1943.

Mayaguez Fire House - opened July 1944 when that city was put back "on limits." This station is opened from 1:00 P.M. to 1:00 A.M.

To combat cases of venereal disease coming from exposures away from the island, a "pro" station was established in the day-room of the Detachment stationed at Port-au-Prince, Haiti, in June 1944, and is operated 24 hours daily. In October 1944 a "pro" station was opened at Trujillo City, Dominican Republic, at the home of the Detachment stationed there but for their own use only.

As a further precaution against exposure outside the island, in August 1944 the responsibility was placed on pilots to see that prophylaxis was carried out by all individuals exposing themselves in these areas. All planes making these trips have been required to carry prophylactic materials. Since October 1944 prophylactic materials have been made available at the Weather Station of the Pan-American Building, Trujillo City, Dominican Republic.

In the period prior to April 1943 prophylactic materials were brught by Unit Funds and then resold to the enlisted men. Following that date, Unit Commanders were permitted to use funds to purchase from the Medical Supply Officer, at cost, adequate supplies of condoms and prophylactic kits for issue to the individuals going on pass. In October 1944 a new type prophylactic kit was made available, replacing the twe-tube set previously in use. The present kit appears to be more satisfactory in every way. During the same month, free issue of prophylactic materials to units by Medical Supply Officers was permitted on basis of mean strength

Sulfathiazole by mouth for prophylaxis against gonorrhea was authorized at this station 18 November 1943. The report on the use of and results from sulfathizole prophylaxis and the seventh-day physical inspection of individuals receiving sulfathiazole for prophylaxis was discontinued 16 June 1944.

Because of the high incidence of venereal disease among civilian population, great efforts were made to obtain and maintain cooperation of civic authorities, especially the Insular Public Health Service. On 7 July 1943, a civilian field agent was assigned by the Insular Health Department to the V. D. Control Officer for the purpose of locating and rounding up reported contacts for examination. The information concerning these individuals was obtained from the infected soldier and then transcribed on Form MD 140 which was authorized 29 October 1943.

In June 1944 through the efforts of the Venereal Disease Control Officer, the Insular Commissioner of Health established a detention house in Aguadilla for temporary isolation and treatment of prostitutes.

To supplement methods of control of venereal disease and since the success of the Army Venereal Disease Control Program was dependent, in a large measure, on the adequacy of the individual soldier's knowledge of the subject, education of the soldier regarding venereal diseases and their prevention was considered an important part of their training. Since 4 April 1944 Unit Venereal Disease Control commissioned and non-commissioned officers of each organization attend monthly meetings presided over by the Medical Venereal Disease Control Officer and held at the 330th Station Hospital. At these meetings are discussed individual cases, rate for the month, venereal disease control activities for each organization, and new measures are instituted for decreasing the rate.

At first, all cases of gonorrhea and syphilis were being hospitalized and treated, in accordance with Circular 174, Office of The Surgeon General, 26 July 1942. From February 1943, uncomplicated cases of gonorrhea were treated on a duty status with one course of sulfathiazole or sulfadiazine, treatment consisting of one gram four times a day for five days. A second course of the drug was advocated if there was evidence of persistence or recurrence of the disease after a lapse of two or three days following the first course. If cure was not affected, patient was then transferred to the 298th Station Hospital (now loist General Hospital) as a sulfa-resistant case for penicillin therapy.

From 22 September 1944 this hospital was authorized the use of penicillin for cases of gonorrhea resistant to one course of sulfa drugs and from 31 October 1944 penicillin was authorized for all new cases of gonorrhea.

The use of penicillin for primary, secondary and latent syphilis was authorized from 31 October 1944.

During the past year a soldier confined to the hospital for venereal disease had to forfeit his pay for the period of hospitalization, and in addition, on this Base, he was restricted for a period of 90 days.

From 9 October 1943 restrictions for syphilis were 60 days from day of beginning of treatment and for gonorrhea and other venereal diseases during treatment and for 60 days following. From 17 October 1944 venereal diseases are being considered as any other disease

since there was no loss of pay during hospitalization. Since 2 December 1944 all venereal diseases are considered in line of duty except when contracted while being A.W.O.L., a deserter, or when the diseases is concealed.

Since 7 and 11 December 1944, the following restrictions are applied to infected individuals:

- 1. Quarantine to company or similar unit area continuously for the following period of time:
  - a. Syphilis 30 days after discharge from hospital.
- b. Other venereal disease during treatment and 30 days after completion of same.
- 2. Denied overnight passes for 2 months after completion of quarantine.
- 3. Denied all 3-day passes and furloughs for 5 months after completion of quarantine.
- 4. Other members of V. D. Control groups to which a man contracting venereal disease is assigned to the denied all overnight, week-end, and 3-day passes for a period of 30 days. Furlough privileges not to be affected.

#### Malaria:

Prevention of malaria has been and is accomplished by preventing the breeding of mosquitoes, screening and keeping the mosquito away from the individual. Before July 1942, malaria control on this Base was confined to the use of mosquito bars and the screening of buildings. The rate, however, became so high that a vigorous program of eliminating breeding places was instituted by oiling and fillingin all stagnant pools. The effectiveness of these measures is reflected by the marked decrease in the malaria rate.

Year	Cases	Rate
1941 1942 1943 1944 1945	24	41 per 1,000 per annum 68 per 1,000 per annum 4.26 per 1,000 per annum 0.37 per 1,000 per annum 1.75 per 1,000 per annum

All the cases in 1945 occurred in Green Project personnel or in transients ferried by planes to the States. The few new cases appeared after the discontinuance of atabrine suppressive therapy after the men left Italy. All the cases, both new and old, in the Green Project group were Plasmodium vivax. One relapsing case among Base personnel was falciparum.

During the last two years there has been no case of malaria which was contracted on the Base. The few cases were contracted off the Base while on pass, etc.

Suppressive treatment of malaria has not been deemed necessary on this Base or in the area. All patients leaving the hospital with a clinical cure of malaria have been requested to take a daily tablet of atabrine for three months to prevent relapses.

## Intestinal Diseases:

The prevention of diarrhea, enteritis, and dysentery narrows down to the prevention of introducing the causative organisms into food, water, and inhibiting the growth of the few that may be accidentally introduced.

The introduction of the causative organisms is prevented on this Base by:

- 'a. Proper disposal of all body wastes and garbage.
- b. Keeping the fly count at a minimum, by control of their breeding places.
- c. Thorough and complete screening of all places used for food storage, preparation and consumption of food.
- d. Complete cleanliness of all persons and equipment used in the handling of food.

The growth of the few organisms accidentally introduced in food is controlled by proper ventilation and refrigeration of those foods which lend themselves to such growth of organisms, as custards, etc

## The rates for enteritis have been:

Year	Cases		Rate
1942	34		
1943	72	j	12.6
1944	50		18.3
1945 (thru Sep)	54		17.5

These rates do not reflect an accurate picture of the incidence of diarrhea on the field because only the severe cases are hospitalized. The great majority are treated as sick call or get self-medication. The average soldier accepts diarrhea as one of the tribulation of Army life and so treats it.

An epidemic of diarrhea involving approximately 2,000 persons occurred during Christmas week of 1944. It was traced to a break in technique in the process of making reconstituted milk. The cans in which the milk was being stored after processing were not being properly cleaned and sterilized. All milk and milk products stocked in the Base at the time were destroyed. A high pressure steam sterilizing plant was installed to facilitate the proper sterilization of all the milk and ice cream machinery and cans. There has been no further trouble from this source. No definite organism was isolated in the above outbreak.

A minor outbreak of diarrhea involving 11 civilians, all eating at the same mess, occurred 18 February 1945. This outbreak was traced to the meat loaf which had been served them at the previous evening's meal. Again the organisms could not be isolated.

There are always scattered individual cases of diarrhea on the Base. These are usually caused by either dietary indiscretion on the part of the individual or by eating in the surrounding towns. Another factor is the large number of Puerto Rican food handlers employed in the Base commissary and messes. Their knowledge of personal hygiene is below standards, and it requires constant supervision and instruction to prevent them from contaminating food.

An outbreak of diarrhea involving about 100 persons eating at the Officers! Mess occurred early in January 1945. Colon aerogenic organisms were recovered from the buckets of crushed ice used to make iced drinks for the diners and at the bar. The ice was sterile when it reached the mess in cakes but the crushed ice was being dispensed with bare hands. Scoops were substituted and no further trouble occurred.

Dysentery	Cases	Type
Dates March - August 1942	16	Amoebic
August - November 1942	7	Bacillary
July 1944	1	Bacillary

The cases occurring in 1942 were apparently not investigated for source of infection. The soldier with dysentery in 1944 reported eating at the Service Club. All the food handlers there were examined and their stools cultured but no dysentery organisms were isolated.

## Intestinal Parasites:

## Helminthic Infestation

a. Uncinariasis (ankylostomiasis) is extremely rare in Continental troops stationed here. One Continental pilot from Georgia was the only one so infested in the past two years. It is frequently found among Insular admissions. It is our observation that if individuals have been well fed, the infestation does them no apparent harm. Most of the admissions will be heavily infested and yet have no secondary anemia. The condition responds to treatment very quickly.

Year	Cases	Rate
Jul-Dec 1941 1942 1943 1944 1945 (thru Sep)	9 51 20 1	9.2 per 1,000 per annum 3.5 per 1,000 per annum 9.2 per 1,000 per annum

- b. Trichuris trichiura is very frequently found and since it produces no symptoms and is difficult to eradicate it is not treated.
- c. Strongyloides intestinalis was found only twice in the last two years.
- $\mbox{$d_{\odot}$}$  Ascaris lumbricoides and pin worms have not been found in military personnel.
  - All the above mentioned infestations can be prevented by:

Proper disposal of feces and urine.

Wearing shoes which completely inclose the foot.

e. Schistosomiasis has not been found in any Continental troops. It is comparatively rare in Insular troops because inductees so infected are screened out at Induction Centers. Those admitted with this condition either were missed at induction or became infested subsequently.

The rates have been:

Year	Cases	Rate
1942 1943 1944 1945		1.4 per 1,000 per annum 3.2 per 1,000 per annum

The prevention of this condition is similar to that of other intestinal parasites with the addition of:

No bathing in contaminated water.

No washing clothes in contaminated water

No drinking of raw contaminated water.

- f. Filariasts has never been found on this Base.
- g. There have been two serologically proven cases of endemic typhus admitted to this hospital. One was in a Continental whose duties took him all over the surrounding towns where he might have come in contact with rat fleas. The second was in an Insular female employee who had been exposed in San Juan about two weeks before admission.
- h. Dengue fever is rare as a source of admission. The rate has been:

Year	Cases	Rate
1941 1942 1943 1944	1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	7.2 per 1,000 per annum 7.5 per 1,000 per annum .7 per 1,000 per annum

The prevention of this disease depends on mosquito control.

i. There was one case of proven sandfly fever in October 1944 contracted in San Juan. There are no sandflies on this Base or in the surrounding area.

## Quarantine Service

Because many planes were coming from regions where insectborne diseases are prevalent, in 1942 it was thought necessary to provide some means of quarantine. The use of the hospital Officer of the Day in inspecting passengers was not practical. (Reasons are not given.)

In October, 1942, the quarantine service was organized with a medical officer and enlisted men working full time. Planes were sprayed with a hand sprayer and passengers and crew were taken to an office in a hangar for examination.

In October 1943 a trailer equipped for the examining of personnel from incoming aircraft was put into use. This trailer, drawn by a tug, met each plane, and the individuals to be examined filed through it. In October 1943, two hundred and thirty-two planes were processed and 3,795 individuals examined by the Quarantine Service. The service functioned twenty-four hours a day. Pictures of the trailer used may be found in the individual unit history of Block VI.

The handling of transient patients (those who were being evacuated to the United States by air) while they were on the base was supervised by the Quarantine Service.

One of the functions of the Quarantine Service was to inspect the planes for animals. Every month numerous animals were brought in by plane.



Venereal Disease:

## Venereal Disease Control:

Our aim at this Post has been to reduce the incidence of Venereal Diseases to the lowest possible figure. To accomplish this we have conducted multiple activities, better prophylactic facilities and an extensive educational program.

The following Venereal Disease rates for this Post show the results obtained by our Venereal Disease Control Campaign:

Year	Highest Rate	Lowest Rate	Rate	per Year
1943 1944 1945	September - 121 February & March -72 February - 27	November - 39 May & November - April - 10		75 39 20 (for first 8 months)

Monthly rates for first 8 months for the year 1945:

Jan	C00	23	May	CD	20
Feb	923	27	June	c	24
March	Car.	25	July	ą.	13
April	€	10	August	٠	20

The above figures show high rates for 1943 which were considerably reduced during 1944, and have reached their lowest during 1945, with as low a rate as 10 during the month of April.

Our rates for 1945 would have been still lower were it not for the fact that troops from this post on vivouac status at APOs 850, 847 and 848 (and therefore out of our control) have continuously supplied us with cases of venereal diseases charged to this station.

A resume of conditions on this post at different times and of the venereal disease control activities undertaken which are believed to have contributed towards the lowering of our rate follows:

During 1942 this post had a rather high venereal disease rate as compared to the present. At that time pro-stations were established in camp and in the towns of Gurabo, Juncos and Caguas. The lack of recreational facilities in nearby towns and within the

post was blamed to a large extent for the many cases of venereal disease. The establishment of the USO Club in the city of Caguas took place. Lectures on venereal disease by chaplains, doctors and organization commanders were given.

At the beginning of 1943 two new theaters, an excellent service club and a large new Post Exchange were added to the post. Such an increase of recreational facilities was an important contributing factor in lowering the number of cases in spite of the fact that the strength of the post was almost doubled. Many large units were stationed at this post (296th Infantry Battalion, 78th Engineers Battalion, 26th Medical Battalion, 326th Quartermaster Battalion). Each of these units had their own pro-stations. But the rate did not come down much on account of the fact that many troops were on bivouac status all throughout the island in camps and outposts and therefore could not be closely supervised. Meanwhile troops were constantly indoctrinated through lectures, posters and firms dealing with venereal diseases (these being given in Spanish and English).

Interviews were held with civilian authorities to bring prostitutes under control. Caguas was the biggest source of infection at that time; raids were made and the prostitutes found to be infected were detained in the Venereal Disease Hospital for Women of that city. The pro station at Caguas was changed to a better location in the month of April and another one was opened at the Quartermaster gate of the post. Pictures of prostitutes with identifying information, which were furnished by the Health Department, were of help in refreshing soldiers minds and identifying the prostitutes. The new prophylactic package was explained to all troops in connection with Training Film 8-154. Other measures which received particular attention were those of being more strict with intoxicated soldiers returning to camp.

By the month of June 1943 a new pro-station was opened in Humacao and the one in Juncos given a new and better location. V-Packettes were made available to all men going on pass, and the cooperation from the civil authorities in tracing prostitutes continued. Lectures were given to all troops including those on maneuvres. NCOs in charge of barracks received illustrated lectures.

Sulfa drugs began to receive experimental use as a pro measure. By the end of the year there was a reduction in the number of cases due to the inactivation of a large unit stationed at the post and also to more careful inspection by unit surgeons of troops prior to their departure to a new station.

In the early part of 1944 the pro-book was introduced. There was at this time a rise in the rate due to contributions from other posts and from transient units (3/4 of cases from units not permanently attached to the Post). Most of the sources of infection continued to be in the Metropolitan Area.

In January 1944, at the initiative of the Post Commander, a general meeting of all unit commanders was held at the Station Hospital, and the policy and action desired to be put into effect by all organization commanders was announced. The personal attention of each responsible officer to the matter of venereal disease control was requested, and a vigorous and constant supervision of action of subordinate commanders was put into effect and carried through. All entertainment facilities were made more active. Athletics were stressed in all organizations, publicity was given to names of units having venereal cases, and all factors bearing indirectly upon the subject were given special consideration. The results of this vigorous action have been most gratifying and have produced excellent results.

As part of this vigorous campaign, in March 1944, troops were tested on their knowledge of venereal disease and 85% of all enlisted men were found to have adequate knowledge on the subject. The venereal educational program nevertheless continued. The number of men using sulfa as a pro-measure increased. One-third of the cases continued to give as a source of infection women from the Metropolitan Area.

Since March 1944, all men who contracted venereal disease began to receive special attention and instruction in prophylactic technique on Sunday afternoons under a medical officer.

In June 1944, a venereal diseas control exhibit was opened at the 326th Station Hospital for exhibition to all units of the Post for an indefinite period of time.

In September 1944, cadres of the Special Training Center began to be trained on special courses dealing with all aspects of venereal disease, these cadres to serve upon completion of training and upon passing a written examination, as venereal disease NCOs of their respective groups. A similar course was also given to all officers on the Post.

During the year of 1945 the training of NCOs on all aspects of venereal disease control and prevention continued, a large number of them have received instruction up to the present. The educational campaign directed to all troops within the post continues by means of

lectures given by the Post Venereal Disease Control Officer to all trainees before they go on their first pass and lectures by the trained NCOs to their respective groups every week and before pay day. Films on venereal disease continue to be shown to all troops as part of the STC program. Civil authorities continue giving us their best cooperation.

Monthly meetings are held, attended by all Venereal Disease Control Officers and Venereal Disease Control NCOs of the post, to discuss all problems and all new measures in the control of these diseases. Pro-books are inspected monthly by the Post Venereal Disease Control Officer to assure that they are properly prepared. Pro-material is also inspected to make sure it is in good condition.

During the month of June 1945 a True and False Quiz submitted by the Department was given to officers and NCOs during the monthly meeting. Results were good. A survey of all epidemiological reports during a nine (9) month period was made to serve as an orientation means towards the venereal disease problem of the Post. This survey was published as a memorandum to all units in the post.

At present we have five pro-stations which are functioning efficiently: three located on the Post (Quartermaster Gate, ARD Gate and Station Hospital); one in Caguas and one in Juncos. The pro-station in Humacao is at present under the supervision of the Surgeon of Fort Bundy. An officers pro-station was established in the hospital area.

The post VD rate has noticeably come down this year so that we have achieved up to the present an average rate of 20 which is the goal set by the Antilles Department and Caribbean Defense Command. It is hoped that through our continuous educational campaign and other related activities our rate will continue to come down to an irreducible minimum.

Since as a rule this post contains the largest number of troops concentrated in any one place within the Antilles Department and generally we have had during 1945 and part of 1944 the lowest venereal disease rate of any post of appreciable size, it is thought the data above noted is of interest.

Malaria:

Malaria Control:

When the Post was established on May 2, 1942 the malaria problem was not at first appreciated. It was believed that because

of apparent natural drainage the area would not contain serious malarial mosquito breeding places. Soon after the Post was manned and in operation the fallacy of this point of view was strikingly manifested. On May 28, 1942 a soldier in the 130th Engineers died-the diagnosis after autopsy was malarial fever, aestivo-autumnal cerebral, acute.

In June of 1942 animal bait traps were placed in operation with the aim of ascertaining the density of the anopheline population. Five traps operated once each during the last week of June, 1942 resulted in a total catch of 485 A. albimanus mosquitoes, thus indicating a very definite malaria hazard. How far we have come from this serious situation is shown by the results of ten animal bait traps operated during the last week of June 1945, when the total albimanus catch was only one specimen. To be sure, the malarial situation here was not so serious as in other posts. It is very probable, however, that had not malaria control measures been efficient by and continuously applied, the problem would have become one of great seriousness.

The recorded malaria rate was consistently reduced. The annual rate for 1942 was 113 per thousand; for 1943 it was 30 per thousand and for 1944 it was 6 per thousand. It is the opinion of this office that in 1945 there were no cases of malaria acquired at this Post=-all the recorded cases being either recurrent or were acquired off the Post.

The factors which have contributed to the successful control of malaria at this Post are as follows:

- (1) Mosquito proofing of all buildings.
- (2) Education of personnel in personal preventive measures i.e. use of mosquito bars, headness, gloves, repellents, indoor spraying of insecticides, etc. and the maintenance of a high level of malaria control discipline.
- (3) Improvement of the drainage of the area by ditch construction and lining, by grading and filling of low areas, etc.
- (4) The routine larviciding of mosquito breeding places both in the cantonment area and its near vicinity.
- (5) The medical treatment of all malaria cases, in such a way, as far as is known, to prevent relapses and to prevent cases from acting as malarial carriers.

At the present time, malaria is no longer a problem. However, continuous maintenance work is necessary to prevent recurrence of the conditions that existed in the past.

The malaria control program of this post has been in charge of U. S. Public Health Service and the Post Engineer; the former being in charge of the extra-cantonment work and the latter of the intra-cantonment work. The Public Health Service started its work on 20 July 1942, just as this camp was being constructed. Control work has consisted mainly of oil and paris green larviciding, and minor drainage work. Permanent control work has been inside the cantonment and was performed by various Federal and Insular agencies, such as the WPA, Antilles Division Engineer and Insular War Emergency Program.

Permanent work consists of installation of pre-cast concrete inverts in ditches, rip-rap, machine grading and filling. Up to date 38,643 lineal ft. of Panama inverts have been laid. Of all streams going thru the camp only two (2) sections remain to be Panama inverted.

The extra-cantonment work consists only of larviciding and some minor drainage. This work covers area approximately 18 sq. mi., up to two miles around the post. Up to this date approximately 16 tons of paris green and 256 tons of lime have been consumed. An average of 55 men are used for this work.

A complete check on the effectiveness of the control work is kept by means of larval collections. Fourteen animal bait traps and three New Jersey light traps are scattered at convenient spots throughout the control area for this purpose. Collections in the animal bait traps are made once a week and every night in the light traps. The collections indicate a downward trend ever since the control program was started. The average of collection at the beginning ranged from 34 to 96 albimanus per trap, where as at present time the average is one '(1) or less per trap. Two of the bait traps are placed outside the control area as a check. Collections in them have been as high as 100 albimanus per trap.

Due to the topography and nature of the breeding places in this area it has not been necessary to use DDT for larvicidal control.

#### Malaria Control Exhibit:

A course on Malaria Control and Discipline has been given at this camp since War Department Training Circular No. 108, dated 21 September 1943, came into effect in this Department. Antimalarial details have been appointed by all units in camp, and periodic instruction is given by the Post Malaria Control Officer who is assisted by four proficient enlisted men in this branch of sanitation.

In April 1944 the Malaria Control Officer, under the supervision and guidance of the Surgeon, opened a Malaria Control Exhibit at the 326th Station Hospital. All enlisted men of this Command were brought to see the exhibit. Each unit was broken up into groups of ten men, and each exhibit was explained to them.

The exhibit pictures the efforts of the military personnel in charge of malaria control and the Public Health personnel working both in the intra-cantonment and extra-cantonment areas of camp. It shows all the permanent construction work done at Camp O'Reilly for the proper drainage of the Post. It shows the use of Panama inverts and side slabs in the creeks and the sodding of the banks with Bermuda Grass. It demonstrates the maintenance program of dusting all earthen ditches with Paris Green, cleaning of lined and earthen ditches, oiling ditches, etc. Individual protective measures were stressed. Demonstration of how to use the mosquito bar, how to tuck it well under the mattress; how to repair holes in the nets either by patching or mending were shown. Items used by men on guard; such as mosquito net, gloves, leggins, indalone, etc., were demonstrated by one of our enlisted men.

The program of mosquito proofing of all barracks in camp has been kept up. Major work is done by the Post Utilities and minor repairs by the anti-malarial detail.

Malaria Control and Discipline have obtained in this Post a high degree of proficiency. Cooperation and great interest on the part of all concerned have made our malaria control program a success.

Rate: Bases upon statistical reports the malaria rates have been reduced to a minimum during the past year. The rate for 1942 was 113/1000/annum, that for 1943 went down to 30/1000/annum. This past year our rate is 6/1000/annum.

No serious malaria problems exist in this camp, however, maintenance efforts shall be continued. It will be necessary to continue the program in the intra and extra-cantonment areas to maintain the best possible drainage conditions and to destroy the anopheles larvae by extensive dusting with paris green and lime. The construction of the permanent lining in the ditches and water courses will help the maintenance problem considerably.





## Venereal Disease:

The prevention and control of venereal disease among the troops of this post is a problem which has always been dealt with vigorously and relentlessly. Among measures used have been motion picture films, conferences, quizzes, informal talks and lectures. The recreational facilities of this post have been utilized to the utmost and this has been one of the greatest factors instrumental in keeping the rate of this post at a low level.

Two prophylactic stations are operated by personnel of this post. One is on the post proper and the other is located in a nearby town. They are in satisfactory condition and are always provided with hot running water and straddle sinks of satisfactory type. Posters are prominently displayed to educate the troops as well as to instruct them in the details of the technique of prophylaxis.

Organized athletics and varied and interesting recreational facilities on the post help to make abstinence possible in some cases and to cut down the frequency of exposure in others. The three methods of prevention of VD are thoroughly presented. They are (1) sexual abstinence, (2) the condom during exposure, and (3) prophylaxis after exposure.

#### Malaria:

The malaria rate among U.S.E.D. civilians living in this area during the construction of this Post in 1943 and 1944, was very high; however the number of cases among Army personnel since the occupation of this post on June 1944 has been only three. These were reported on the 13th, 14th and 15th of August 1944. All three were primary cases. There have been no malaria cases among Army personnel stationed in the Roosevelt Roads area since that time.

Permanent malaria control drainage in this area was estimated to cost \$277,680.16 This work was actually never started and the little permanent construction on the post proper was accomplished by the Post Engineer since the occupation of the Post.

In September 1944, a short while after DDT (Dichloro Diphenyl trichloroethane) was put into use, an L-4 Piper Cub was assigned
to this Post for the purpose of spraying an area of approximately 2000
acres with a solution of DDT in #2 diesel oil. This method of control
was inaugurated in view of its efficiency and low cost operation (about
\$10,000 per year). The expenditure of large sums of money for permanent control was not justified because of the uncertainty of the
future of this post.

The original concentration of DDT in diesel oil used in aerial spraying was 10% by weight. This was later reduced to 5% because of the shortage of DDT. However when it became more abundant, the concentration was again increased to 10%. In a 10% solution it is applied at the rate of 0.2 lbs. DDT per acre.

Aerial spraying with the Cub plane had been carried out on a more or less erratic schedule because of the high winds in this part of the island which made flying unsafe at the low altitude necessary for adequate spraying. Also on several occasions, a break-down in the mechanics of the airplane was responsible for interruption in the spraying schedule. Beginning in November 1945, aerial spraying of DDT for mosquito control work was accomplished using a C-47 plane equipped with two (2), two hundred and fifty (250) gallon tanks and a gravity apray unit. The results to date have been most satisfactory.

The Post Engineer has been doing minor drainage and larviciding on the post proper and the Malaria Control in War areas (MCWA) division of the U. S. Public Health Service has been doing temporary drainage and minor dusting within the two miles radius around the post in areas not accessible to the plane.

There has remained a critical density of malaria transmitting mosquitoes in this area during some months of the year because of infiltration and inadequate control; malaria discipline including adequate screening, proper use of head nets, gloves, and repellents is enforced among the troops.

Routine smears have been taken from all the personnel to determine the number of positive for filariasis; 3% of the smears revealed the presence of microfilaria.

#### Enteric Diseases:

There has never been an undue prevalence of enteric diseases. The few cases of simple diarrhea were mild and of short duration. There have never been any cases of dysentery or typhoid fever among the troops of this post.

A majority of the soldiers have been found to have intestinal parasitism although few of them have had clinical manifestations. Some of the parasites isolated were schistosoma mansoni, mecator americanus, ascaris lumbricoides, trichura trichiuris, and strongyloides stercoralis. The incidence of positive blood smears for filariasis has been 3% as mentioned above. Only two men however, of this group have had clinical manifestations; these consisted of epididymitis and funiculitis.

There were two clinical cases of schistosomiasis confirmed by isolating the ova of schistosoma mansoni in the stool; recovery ensued following therapy with fuadin.





Venereal Disease

The only serious health problem on this base was venereal disease. Although certain control measures were taken, including a prophylactic station in Havana, and another in nearby San Antonia de los Banos, no formal program was instituted until January 1943. The venereal disease rate was very high; for example, 7 syphilis cases reported in one week among 100 men. Personnel was propagandized with venereal disease control information and surveys were conducted to detect all latent syphilis. Among the venereal disease control measures were the following:

5 Prophylactic Stations: 2 in Havana, 1 in San Antonio, 1 at Main Gate, 1 at the Hospital.

Regular Group Informational Lectures and Discussions among enlisted personnel.

Venereal disease control motion pictures.

The "Off Limits" procedure was utilized effectively in San Antonio de los Baños and in Havana.

Men were encouraged to carry prophylactic equipment when leaving the base on pass.

The most vexing health problem in this command for the year of 1944, undoubtedly, was venereal disease. In view of the prevalence of these maladies in this locality, and the complete lack of government control of prostitution, this problem taxed more than ever the medical facilities of this hospital.

At the beginning of 1944, control of venereal disease was accomplished mainly through an educational program consisting of periodic lectures in English and Spanish, given at least once a month in each organization. These lectures were supplemented by movies, dealing with the subject, shown at the Base Theater whenever these films were available. Military Police supervision of "Off Limits" places was carried on constantly and as effectively as possible, considering the innumerable houses of prostitution, small hotels, and bars in Havana and adjoining small towns.

In the last month of 1944, a new plan of venereal disease control was put into operation in each barracks. The barracks were divided into two groups of from 10 to 12 men each supervised by a venereal disease control non-commissioned officer. By this time Captain Jose S. Licha, MC, was the Venereal Disease Control Officer.

The general health of this command remains in an excellent state. However, continuous efforts are made by the hospital medical staff to improve the situation. Daily, weekly and monthly inspections are made of the entire base and its personnel and anything noted on these inspections that may tend to menace the health of personnel is quickly remedied or changed. All foods are inspected, water is tested, personnel are physically inspected, and the grounds and buildings are constantly under surveillance of this hospital. The major health problem continues to be that of the venereal disease situation in this area. Changes are constantly being made in the venereal disease control program in effect of this base. All houses of prostitution are placed "Off Limits" to milie tary personnel in the surrounding towns. No houses of prostitution are condoned in any manner by the medical staff.



Venereal diseases were very prevalent among the native population. Sexual promiscuity was widespread, which made the problem of control difficult. Despite constant instruction in venereal disease control, the rate was persistently high. 17 Many soldiers knew "safe" women and had intercourse without taking any precautions; it was impossible to impress the men with the fact that no woman can be considered to be free of venereal diseases.

All directives from higher headquarters 18 were complied with. A medical VD control officer, was in charge of the control program. Emphasis was placed on individual responsibility to self, family, and the army, as well as on prophylaxis during the following exposure.

Prophylactic stations were operated at the hospital and at the USO in Kingston, where a medical attendant was available at all times. Adequate supplies of pro materials were available at all times.

Prostitution was not controlled in Kingston. Many of the cases of venereal diseases were traced to professional prostitutes.

Treatment was in accordance with TB MED 18.

## VENEREAL DISEASE\*

Month	1941	1942	1943	1944	1945
January February March April May June July August September October November December	383 34	161 154 108 20 21 163 117 146 63 64 68	56 23 76 106 87 78 17 0 107 43 27 43	44 41 52 57 22 76 30 0 35 0	0 38 0 0 37 0 77 61 80
Gonorrhea		243			

(cont'd)

## VENEREAL DISEASE (cont'd)\*

	1941	1942	1943	1944	1945
Syphilis Primary Secondary Tertiary Unclassified	• • • • • • • • • • • • • • • • • • •	. 1			
Chancroid	40e	2			
Lymphogranuloma	enereum	- 3			

<sup>\*</sup> Rate per thousand per annum

#### Malaria:

Fort Simonds was located on the coastal plain where malaria is most prevalent. Two small native villages just off post limits had high malaria rates, 19 complicating control. Malaria control was supervised by the USED until 1 July 1942, when this work was taken over by the army medical department. In April 1944, the USPHS assumed the task of malaria control, though an officer did not arrive here until June 1944. Control consisted of drainage, spraying of breeding places within a two mile radius of the base, 20 and individual malaria discipline. The malaria rate was low, 21 despite the fact that infected natives work on the base.

MALARIA<sup>22</sup>
CHART 1

USPHS - January - February 1943. Four hundred smears taken.

Village	No. Bloods	No. Positive	Type
Rhymesbury	12	1	P. falciparum
Comfort	28	5	3 P. falciparum 2 P. vivax
Content	25	1	P. falciparum
Yorkpen	25	0	2 P. falciparum
Parnassus	25	4	l P. vivax l P. malariae
Bowen	35	6	4 P. falciparum 1 P. vivax 1 P. malariae
Hales Hall	15	2	l P. falciparum l P. vivax
Denbeigh	25	2	P. falciparum
Gimme-a-bit	52	4	P. felciparum
Retirement	25	3	2 P. falciparum 1 P. vivax
Yarmouth	25	2	P. falciparum
Race Course (schoo	1) 42	5	4 P. falciparum 1 P. vivax
Milk River (school	) 25	1	P. malariae

MALARIA23

CHART 2

Village	Post-Distance No.	o. Bloods	No. Positive	% Positive
Rhymesbury	2 miles	12	9 1	8.3
Comfort	3 miles	38	5	13.1
Bullard's Garden	2 1/2 miles	25	1 .	4.0
York Pen	3/4 miles	25	1	4.0
Parnassus	1 1/2 miles	25	4	16.0
Gimme-a-bit	1/4 miles	52	4	7.8
Retirement	1/2 miles	25	.3	12.0
Yarmouth	l mile	25	2	8.0
No Positive	13 P. falciparum	7 P. viva	x l P. ma	lar <b>iae</b>

MALARIA<sup>24</sup>

## CHART 3

Month	1941	1942	1943	1944	1945
January		0	0	0	0
February		0	0	0	0
March		1	0	0	0
April		1	0	. 0	0
May			0	0	O
June		0	0	0	0
July		0	0	0	0
August		0	0	. 0	С
September	,	0	0	0	0
October		8	1	0	దు
November		6	0	0	रता
December	0	?	0	0	c)

Enteric Diseases:

The incidence of gastro-intestinal diseases was low. There were a total of 49 cases of diarrhea admitted to the hospital. 25 Of these, 10 were bacillary dysentery, 1 was amoebic dysentery, and the rest were classified as "diarrhea." There were no outbreaks of "food poisoning." Native food handlers were examined as possible carriers of intestinal diseases, including worm infestations.

Helminthic Infections:

No helminth infections were found among military personnel.

Schistosomiasis:

This disease does not occur in Jamaica.

Filariasis:

There was no evidence of any infection of military personnel, although the disease occurs among the native population.

Typhus:

There were no cases of typhus among military personnel.

Dengue:

Dengue was prevalent during December 1941 and January 1942, and a few cases occurred through June 1942.26 There have been no cases since that time.

Prostitution is extremely prevalent on this island. It is not confined to one area and flourishes quite openly in the nearby villages as well as in the town of St. John's. Since the inception of the medical installations here, venereal disease control has been the most difficult problem. There has been no provision made for legal jurisdiction over civilian prostitutes. The British possess an archaic precept nominally classified as "right of domain" which prevents entry into houses by local police without search warrants, even in active pursuit of a prostitute, caught soliciting. No detention type or Public Health hospitals exist here. The total of voluntary patients treated for venereal disease is by no means comparable with the number untreated.

Recognition was early given to the fact that provision of adequate recreational facilities is necessary in the control of venereal disease. Athletics, unit outings, movies, dances, well equipped day rooms, service club, and U.S.O. Club, were some of the measures utilized.

In October 1941, the Base Prophylactic Station was opened at its present location. In December 1941, an additional station was opened in the civilian jail house at St. John's. In April 1942, the location of the town station was transferred when we acquired our own installation at the periphery of the "Off Limits" area in St. John's. Thus at present, there are two prophylactic stations in operation: one on the Base, and the other in the town of St. John's. Both have adequate facilities, and are manned by trained soldiers of the Medical Department.

The venereal disease rate which has fluctuated greatly from month to month as shown on the following chart, indicates, that although the incidence of venereal disease has been lowered appreciably, the problem still exists. These figures give the rate per 1000, per annum.

	1941	1942	1943	1944	1945
January		84	59	127	47
February		132	92	17	95
March		131	110	57	0
April		91	75	. 0	. 46
May		193	57	31	46
June		50	96	28	0

		1941	1942	1943	1944	1945
July			80	160	36	0
August			48	77	. 0	0
September			22	61	34	34
October	Ĉ,	222	161	57	43	
November .		70	81	76	170	
December		262	. 294	142	-1 0	

The average percent of cures of gonorrhea with sulfathia-zole was 30-40. The acquisition of sufficient penicillin for treatment of gonorrhea, starting in 1944, has obviated the necessity for transfer of most cases that might prove sulfonamide-resistant. This resulted in reduced hospital days and relative non-effective rate.

#### Malaria:

Before this Base was established, it was contemplated that malaria would prove the major health problem. Malaria is very prevalent among the civilian population of this Island, and our Base Area had numerous breeding sites in the form of brackish swamps and ponds of fresh water. In addition a malaria hazard of great importance was a negro village of some three hundred population that jutted into the center of our Base from the west.

The eradication of breeding sites was found to be a comparatively simple matter. Surface water was early eliminated by filling or drainage. Costal swamps were cleared and partially filled and canalized to make them a part of the ocean. From the beginning a program was instituted of steadily spraying and oiling water holes, and seeing that no containers were lying about in which water might collect.

In April 1942, the above mentioned negro village was moved two miles away from the Base, eliminating human carriers of malaria organisms. The trade winds blowing almost continually across the Base from the sea, have further helped to reduce the mosquito problem. The following chart shows that by April 1944, the malaria rate for this Base had become zero and it has remained so ever since.

Month	1942	1943	1944	1945
January		0 -	4	0
February	*.	1	. 2	. 0
March		0	4	0
April		0	. 0	. 0
May	2	1	0	0
June	. 0 .	1 .	0	/ O
July	0	1	0	0
August	0	. 3	0	0

Month	1942	1943	1944	1945
September	2	4	. 0	0
October	2.	Ó	0	0
November	0	0	0	
December	1	. 2	0	

Despite the fact that tropical diseases are extremely common on this Island among the civilian population, there have been relatively few tropical diseases observed among soldiers at this Base. No cases of malaria have been observed since early 1944, and majority prior to that time occurred in newly arrived Puerto Rican troops who evidently contracted the disease on their home island. Helminthic diseases also, have occurred almost exclusively among Puerto Rican personnel, as have schistosomiasis and filariasis.



Venereal diseases were the rule rather than the exception among the natives. Local government physicians could not obtain sulfa drugs, arsenicals or bismuth for the treatment of prostitutes even if they sought treatment.<sup>27</sup> There was an almost total absence of white women in the area and the monotony of wartime dispositions for combat in an essentially peacetime situation, led men to visit native shacks, drink a local rum called "Smack" and have sexual intercourse with black native women practically all of whom were infected. The fact that native huts were dispersed throughout the Army area on private land increased control problems greatly.<sup>28</sup>

After the initial difficulties of securing adequate medical supplies and personnel were eliminated, the major medical problem of this Command was the control of venereal disease and malarial fever. In January 1943, the venereal rate was 283 per 1,000 per annum. This high rate was due in part to the lack of a planned health and educational program and its rigid enforcement. The Base Surgeon also considered the high rate due to the character of the personnel of the worst offending unit which had an average I. Q. of 89.7% (Grade 4, below average) and the long periods they had served in the tropics. 29

In March of 1943, a clinic for prostitutes was opened under the auspices of Dr. Bristol, British Government physician at Vieux-Fort. On 3 April 1943, sixty-two (62) women of the "on-limits" village of Beausejour had been examined and 42 cases of syphilis, 5 cases of gonorrhea, 1 case of chancroid, and 3 cases of lymphogranuloma were found. Every effort was made to get these women out of the infectious stages as rapidly as possible. No woman refused treatment. 30 In January 1945, a survey was conducted of 25 native women from Beausejour. Five cases of syphilis and 2 of gonorrhea were discovered. In a more recent survey in November 1945, on 39 women of Beausejour, all known to be frequent contacts, 15 cases of syphilis, 10 cases of gonorrhea, and 1 case of chancroid were discovered.

Extensive education programs were started among the troops and additional prophylaxis stations constructed. 31 Athletic and recreational activities received increased attention, particularly between the hours of 5:30 PM and 11:00 PM. Overnight passes were issued only to those individuals whose past records of good conduct

entitled them to reward. All intoxicated soldiers found in civilian areas were taken into custody and returned to the post. Venereal disease rates were lowered but remained unduly high and far above the goal of 20 per 1,000 per annum.

The Base Surgeon considered the rates "theoretically" inexcusable, when in November of 1943, after ten months of extensive control measures, the rate was 174 per 1,000 per annum, for the following reasons:

- l. Medical officers have been in the service long enough to have acquired some knowledge of public health technique.
- 2. An excellent course on the venereal diseases, their diagnosis, prevention, and cure has been given to all line VD Control Officers and NCO's. All other officers and men have also received instruction, although not in such detail, other than that concerning prophylaxis. A general, very high standard of knowledge among line VD Control Officers and NCO's was shown in written examination at the end of the course on venereal disease control. No one on this base can plead ignorance of venereal prophylaxis.
  - 3. Prophylactic measures which the Army provided:
- a. There is an adequate number of prophylactic stations, well equipped, with well trained, well supervised personnel.
- b. V-packets are readily available to both officers and men.
- c. Diagnosis and treatment of venereal disease is available to women at the "Bristol Clinic for Women." After examination, if found free of venereal disease, women may obtain a statement to that effect upon request.
- 4. Adequate information has been disseminated, and trained personnel is present in each unit to continue instruction plus the services of all Medical Officers. 32

It was concluded that the teaching facilities previously mentioned had not been available for a sufficient length of time to secure the expected rate. It was also recommended that men who have been in the Caribbean Area for two years or longer, who felt they were "forgotten men" be reassigned as soon as possible. Many men ceased to have interest in themselves or their unit. 33

A pass system was instituted in January of 1944 which included treatment and non-exposure forms and required all enlisted men to have a physical examination before going on pass. This allowed

closer supervision and education of men going on pass, especially those who left the post and exposed themselves to venereal infection most frequently. The villages of Pomme and Augiere were placed off limits, making general policing and medical follow-up of infected women more effective. 34 To assist in allocating new cases, the "shacks" in the village of Beausejour were provided with numbers painted in black on a white board and placed in a conspicuous location on the front of each building. Soldiers were required to record the number of the house they visited on the treatment slip section of the pass form. Statistical data provided by completed pass forms thereby provided medical officers with detailed information concerning the source of infection and preventive measures taken by the soldiers.35 This program was continued and venereal disease rates continued to lower. However, it was not until combat forces, including Air Corps personnel, were reassigned to other stations that the rate approached to 20 per 1,000 goal. The Bristol Clinic for Women was closed during October of 1944 since venereal disease rates had been substantially lowered and Dr. Bristol disassociated himself from the project. 36 In 1944 only 6 new cases of venereal disease were reported in both the Ground Force and Air Corps organizations. From 1 November 1944 to January 1945, no new venereal disease cases were reported. This reduction is attributed to continued educational efforts by the medical section personnel of this Command, the abandonment of tactical dispositions by combat forces, the continued operation of numerous. well established prophylactic stations, improved entertainment facilities, and the fact that the men of the Command sent in as service troops were of a generally higher type. However, during the first eight months of 1945 the monthly rate among the troops fluctuated widely, between 0 and 129, averaging 47. Approximately half of these cases occurred among newly arrived personnel. In September the rate shot to 204, October 177, and November 102. The cases occurred, with the exception of only one man, entirely a new personnel. Under these conditions the entire program of education has been intensively whipped up. It will be necessary to maintain a constant level of propaganda and education as old personnel are released for discharge and new personnel arrive.

#### Malaria:

The Vieux-Fort area prior to swamp clearance, filling, and draining, was a text book example of a "before treatment" malaria area. Large swamps and numerous ditches of fresh water alive with anopheline larvae were situated, between heavily infected native population (90%) on one side and a highly susceptible army population on the other.

This condition complicated planning for construction layouts and resulted in the Cantonment Area being moved from the Vieux-Fort

area approximately a mile north to higher ground provided with natural drainage and as far removed from native population as practicable.

Mosquito control measures were started by the contractor with the filling and draining of swamps and were continued by the Armed Forces when they arrived on the island during August 1941. Until December 1941 only 2% of army personnel had been infected and control measures were not extensive. However, between 1 and 22 May 1942, 33 cases of malaria were reported among army troops stationed along the seacoast west of Vieux-Fort River and adjacent to a large swamp. (Tourney) As a result of the increase in the malarial incidence, a study of the situation was made by Dr. Wilbur G. Downs and Mr. Raymond C. Shannon from 2 to 4 June 1942. The elimination of the Tourney Swamp was recommended and 1600 gallons of oil were recommended to be allotted monthly for mosquito control work. 38 These recommendations were followed and the malarial incidence dropped to a low level. Antimalarial measures were stressed by all unit commanders. Routine ditch clearance, filling, and oiling have continued and the 1944 incidence showed 9 per 1,000 per annum. This improvement is also due to the removal of troops from outposts and guard stations adjacent to swamp areas which was made possible by improved tactical situations in the area.

The last case of malaria to arise on this base was admitted to hospital on 2 May 1944. To date the figures of mosquito catches, larval dip findings, etc., show a very low anophelene population in the area. This has been maintained economically by widespread use of unskilled native labor in maintenance of grass-free ditches, tide-water drains, tidal gates, exposure of marshes and swamps to open ocean tidal changes, oiling, ditching, filling, etc., wherever these various methods were most readily applicable.

The use of DDT spray from aircraft was considered for this base but dicarded because of constant winds in excess of 10 to 12 m.p.h. and because of the varied terrain which includes many ravines. It is felt that the present method of control is most suitable for the present status of the base. For more permanent control a resurvey should be made with a view to constructing concrete inverts, concrete lined drainage ditches, etc. Should the present level of control activity relax the incidence of malaria would inevitably rise as there is still a large reservoir of the disease in the local population.

#### Schistosomiasis:

Schistosomiasis is endemic in the Soufriere valley where a considerable portion of the native population is chronically infected.

The Soufriere river contains large numbers of cerceriae which, it is belived by the local medical authorities are the source of the spread of Schistosoma mansoni.39

One case only of Schistosoma mansoni has been diagnosed in military personnel. This case was discovered in June 1945 in a Puerto Rican soldier who was probably infected prior to entry into the service.

#### Filariasis:

According to Dr. Greson, 40 filariasis does exist to a slight degree among the natives of St. Lucia. However, army medical officers have not seen any evidence of elephantiasis in the southern half of the island. Vectors do exist on this island.

During a special survey of Puerto Rican personnel in December 1943, four (4) cases of filariasis were discovered by examination of night blood smears. These were taken to be cases incurred prior to arrival at this base. The affected men were transferred to Puerto Rico. No cases have occurred since that survey.

## Leprosy:

A Leprosarium is maintained outside the town of Soufriere by British medical authorities. There are approximately thirty (30) cases of chronic leprosy isloated in this institution. While the infection exists in the island, new cases are rare and the incidence is very low. Victims of this disease are institutionalized until the cases are proven to be arrested and non-contagious. Then they are liable to release to their homes. However, the period of institutionalization is long and, as a result of economic difficulties and disintegration of family life, arrested cases generally elect to remain in the leprosarium. There is no active treatment being used, at present, chaulmoogra oil having been discontinued as painful and ineffective. 41



The venereal disease control program has been very successful; since July 1944 there have been only 5 cases of venereal disease. Of these four were contracted while the soldier was in Puerto Rico on furlough. Success of the campaign is attributed to:

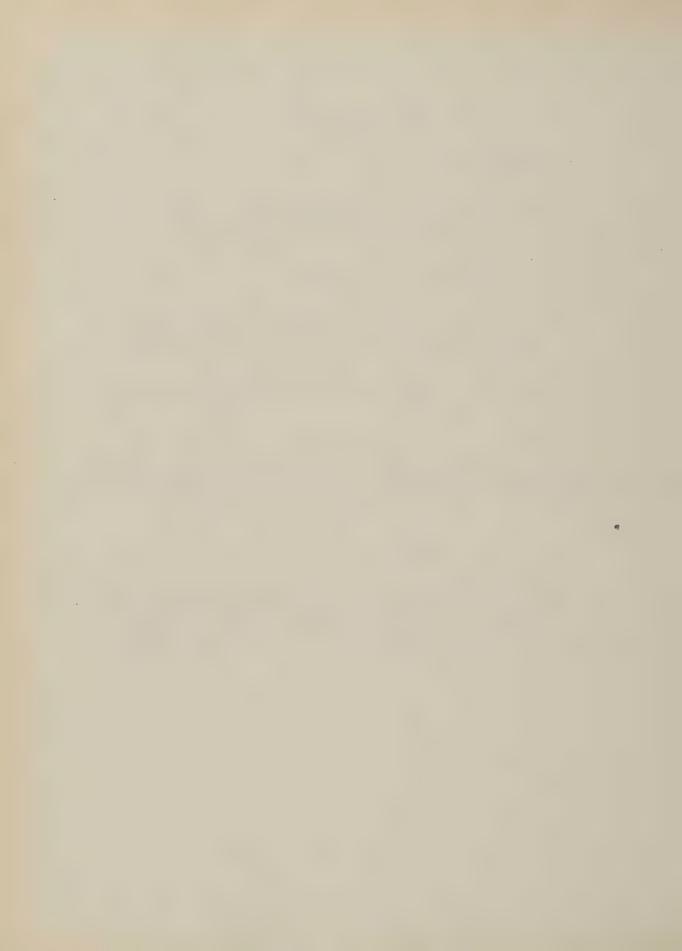
- 1. The broad educational program.
- 2. The close observation of pro-records, and check up on frequent contacts in the neighboring city by the local health officials, who have been very cooperative in this problem.
- 3. The strict observation of Department directives.

#### Malaria:

Mosquito control is not a difficult problem in this island. The hilly terrain and lack of small streams and lakes explains the lack of mosquitoes. There are no insect borne diseases endemic to the island.

## Other Tropical Diseases:

The only tropical disease encountered are fungus infection of the ears, axillas, inguinal region and of the feet. These have not been of the severe nature often reported, and have responded to usual forms of treatment. Intestinal parasitism has not been an uncommon finding among Puerto Rican troops.





Venereal Disease has always been a great problem in the Virgin Islands.

Ninety-five percent of the population of St. Croix is negro and promiscuity is the keynote of the morals of the island. The number of prostitutes are few, but because of the rampant promiscuity among the negroes, the venereal disease rate is high. It is estimated that 20 percent 42 of the population have syphilis, in all different stages, treated and untreated. The United States Public Health Service under the authority of the Venereal Disease Law has made a determined effort to treat every case of syphilis, and to seek out the contact in each case, so that treatment may be instituted.

In view of the high venereal disease rate on this island, the incidence of venereal disease in the personnel of this station has been considered as satisfactory. The following tables 43 show the monthly venereal disease rate at Benedict Field. Many of these cases reported were not contracted on the island of St. Croix, but at Puerto Rico. However, the records are not complete enough to allow an accurate survey of the origin of the disease.

T A B L E

INCIDENCE OF VENEREAL DISEASE 1941 - 42

MONTH	STRENGTH	VENEREAL DISEASE
April	164	2
May	163	1
June	162	3
July	166	1
August	166	3
September	166	1
October	164	1
November	81 •	2
December	4	0

TABLE INCIDENCE OF VENEREAL DISEASE 1942 - 43

MONTH	STRENGTH	SYPHILIS	GONORRHEA	OTHER V. D.	TOTAL V. D.
January	0				0
February	469				7
March	495				5
April	508				1
May	547				4
June	585				3
July	561	1	1	3	5
August	635	1	2	0	3
September	525	. 0	3	1	4
October	398	2	1	0	3
November	393	0	2	0	2
December	383	0	1	1	2

TABLE INCIDENCE OF VENEREAL DISEASE 1943 - 44

MONTH	STRENGTH	SYPHILIS	GONORRHEA	OTHER V. D.	TOTAL V. D.
MICH 181	DIIIDZIGIII	CITILDIO	donordansa	CILILAT VO DO	101411 11 11
January	357	1	3	. 0	4
February	359	0	0	0	0
March	363	0	0	0	0
April	388	0	4	0	4
May	387	0	1	0	1
June	396	1	5	0	6
July	200	1	1	1	3
August	117	3	3	0	6
September	121	0	3	0	3
October	127	1	0	0	1
November	127	0	3	0	3
December	102	0	0	0	0

TABLE

	The state of the s	INCIDENCE	0	VENEREAL DISKASE	SE 1944 -	- 45	Andread and the Contract of Special Contract of the Contract o		pri mari 2 Mills "William Mari ni dili 1 Mills
MONTH	STE	STRENGTH	SYE	SYPHILIS	GONC	GONORRHEA	50	OTHERS	TOTAL
	Insular	Continental	Insular	Continental	Insular	Continental	Insular	Continental	
January	87	56	0	0	0	0	0	0	0
February	56	2	0	0	0		0	0	0
March	8	75	0	0	0	0	0	el	r-1
April	20	32	0	0	0	e-1	0	0	p-1
May	7,1	77.	0	0	0	0	0	0	0
June	15	†12	0	0	0	0	0	0	0
July	17	23	0	0	0	H	0	0	<u>~</u>
August	17	172	0	0	0	H	0	0	-1
September	16	23	0	0	0	0	0	0	0
October	16	त्र	0	0	0	0	0	0	0
Movember	16	<b>1</b> 72	0	0	0	0	0	0	C
December	16	25	0	0	0	0	0	0	0

		INCI	INCIDENCE OF	VENEREAL DIS	DISEASE 1945	15 - 46			
MONTH	STE	STRENGTH	SY	SYPHILIS	GONC	GONORRHEA	50	OTHERS	TOTAL
	Insular	Continental	Insular	Continental	Insular	Continental	Insular	Continental	
January	1.6	<b>42</b>	0	0	0	0	0	0	0
February	17	23	0	0	0	0	0	0	0
March	7	45	0	0	0	0	0	0	0
April	18	22	0	0	0	0	0	0	0
May	17	23	0	0	0	0	0	0	0
June	16	33	0	0	0	0	0	0	0
July	16	33	0	0	0	-	0	0	Н
August	17	35	0	0	0	0	0	0	0
September	15	35	0	0	0	0	0	0	0
October	12	30	0	0	0	0	0	0	0
November	7,7	28	0	0	0	0	0	0	0
December	17	72	0	0	0	0	0	0	0
		Constitutional of the second second	Annual Control of the	Committee and the second committee of the second commi	The same of the sa		Company of the second s		Management and the second

The Venereal Disease Control Program was instituted with the establishment of the Base. The following measures were taken to insure Venereal Control:

- a. Prophylactic stations were established in the two towns adjacent to the post, and a prophylactic station on the post was also available.
- b. Complete and thorough prophylactic treatment after exposure was advised by all Unit Commanders.
- c. Sex morality lectures were given regularly; charts and motion pictures of venereal disease were exhibited.
- d. Full cooperation with the local health authorities was obtainable where contacts could be identified. Every effort was made by local authorities to locate venereal contacts and place them under treatment.
- e. Post entertainment in the form of motion pictures and USO shows were available.
  - f. A tennis and basketball court was completed.
- g. New athletic equipment was procured and an athletic program was encouraged.
- h. Periodic picnics, dances, and swimming parties were arranged.
- i. Prostitution was sparse, but promiscuity widespread. With the cooperation of the Local Health Authorities and the Army, every effort was made to discover venereal disease contacts, so that treatment could be instituted.

#### Malaria:

The freedom from malaria that is enjoyed on this island defies explanation. Anotheles albimanus is present in ample quantities to be a vector. Local doctors claim that the disease has been kept out of these island by routine blood smears on all incoming people. Despite this local temporary freedom from malaria, previous epidemics of the disease have occurred; (the last being in 1936). Since epidemics of malaria are likely to occur again, anti-mosquito measures44 cannot be relaxed.

Malaria	,	*	·
1941 - 1942	0		
1942 - 1943	0		
1943 - 1944	2		
1944 - 1945	0		
1945 - 1946	0		
1946	0		

## Tropical Diseases:

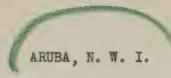
There is a certain amount of tropical diseases on the island of St. Croix. It is estimated that 25 percent of the population are infected with filariasis. Intestinal parasites are the second most important medical problem on this island. Approximately 10 percent of the population infested with ascaris lumbricoides and trichiuris. Five percent of the population have hook worm, and 5 percent are infested with schistosomiasis mansoni, which is imported from Puerto Rico. All civilians coming to this island for residence, have a blood smear made for blood parasites, and stool examinations for intestinal parasites. In this way new cases of parasitic infestation are discovered and treatment instituted.

No cases of intestinal parasitic infestation, schistosomiasis, filariasis, or typhus were reported from Benedict Field.

A few cases of dengue were contracted by military personnel in 1941 and 1942. See Table II.

TABLE II

COL COME TO COME THE COLOR CONTROL CON	Dengue	
1942 ( 1943 (	2 3 0 0	.•

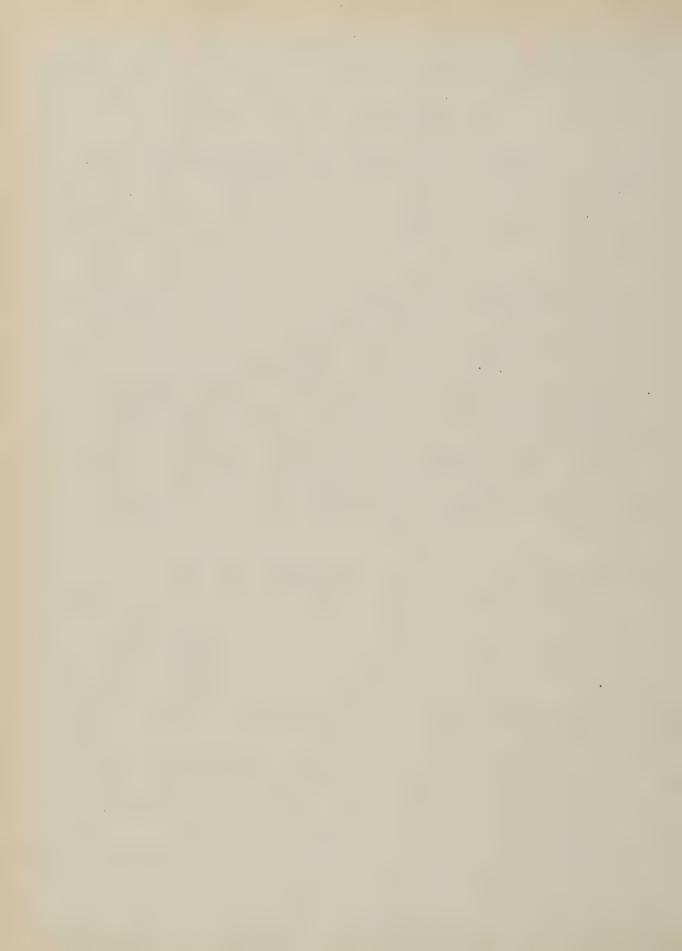


The general health of the command has been excellent. The favorable climatic environment and lack of mosquitoes are major contributing factors.

Intestinal parasitic diseases, malaria, and schistosomiasis, have been diagnosed but patients were infected prior to arrival at this post.

Venereal disease control has advanced rapidly. Each organization was broken down into venereal disease control teams including unit officer and non-commissioned officers. Meetings of leaders and men average not less than once a week during the drive. Units were finally educated and trained to consider venereal disease on a competitive basis. With the consent of patients their lesions were demonstrated at venereal disease talks. There were two prophylactic stations available, one at the hospital dispensary and one in town. Mechanical and chemical prophylactics were available to all men prior to going out on pass. Prophylactic items were also available at the prophylactic stations. Local officials were very cooperative in disposing and treating infective contacts. Infected girls visiting the island as artists for six weeks were immediately deported. Infective natives were immediately put under medical supervision. The rate from 1 January to 1 September 1945, for the post was 20 per 1000 per annum.

Statistics and other information vital to the preventive medicine history of this post are not available at this time.





Venereal diseases have always been a health problem in this camp because of the limited methods available for their control. The existence of prostitution is not officially recognized in the island of Curacao so that the control of civilian prostitutes is impossible. Several movements have been tried with this objective but official church and government opposition has made them fail. 45 In the last year or so, however, the Army has had the cooperation of the Dutch Police Force in the apprehension of contacts, and of the Dutch Public Health Department in their examination.

The main bulk of prostitution is made of groups of women, who under the names of "artists" and "student nurses," are granted two-week visas to visit the island and ply their trade. Contact and segregation under the circumstances is impossible. Again, the sexual act has always been and is practiced by military personnel at a nearby beach, there being no houses of prostitution and no facilities to be found. In an attempt to prevent diseases an Army truck was once equipped to administer venereal prophylactic treatments and sent to that beach at night on the week following pay days. On one occasion 60 treatments were administered in one single night. However, the enterprise seems to have been a failure because of inadequate facilities to administer a good pro and the increase in the venereal rate. Mobile pro station was discontinued soon after. 46, 47

The only actual control of venereals, then, has always been education of the men. This has always been emphasized in several control plans put into practice, thru films, lectures by medical officers and divisions into soldier sub-groups for discussion and control. The use of mechanical and chemical prophylaxis has always been stressed. Since more than two years ago the prophylactic items have been made available free to Army personnel. Other control measures have been the generally known ones practiced in all Army camps.

One pro station is centrally located in town within one-half hour's distance from the place of exposure. Since its installation, it has been maintained open until midnight every day, and it gives service to Army, Navy and Merchant Marine personnel. In addition there are sub-stations in the camp hospital and in the Air Field dispensary. Up until the time the Coast Artillery units left the island, all out-lying outfits were provided with chests stocked with prophylaxis equipment for self use by men in cases of "emergencies," under the supervision of an aid man or the charge of quarters.

Venereal rates have shown a gradual decrease since the landing of troops in Curacao. Average yearly rates have been as follows:

1942 above 100/1000<sup>48</sup>
1943 81/1000
1944 35/1000<sup>49</sup>
1945 (up to present)
20-25/1000

This hospital has always admitted venereal cases into the hospital. On very few occasions have they been treated as out-patients. In spite of this the actual non-effective rate has been low except during the first months of occupation, when there was a high incidence of chancroid cases. 50 The chief disease has always been gonorrhea, though there are on record three to five cases of "new" syphilis, presumably Curacao acquired.

#### Malaria:

Malaria has never been a problem in Curacao. There are few mosquitces in the island; the land is arid and dry, of the New Mexico-Arizona type. The two or three cases of malaria fevers recorded in the Army hospital were all acquired in other malarial regions. 51

#### Enteric Diseases:

Increase in incidence in late fall and early winter, the "rainy" season and what might also be called the "fly" season. This yearly increase manifests itself in camp among soldiers. The diseases are specific dysenteries of the Flexner and Schmitz - bacillary - type in about 50 percent of the cases. 52

#### Helminthic Diseases:

With the coming of Puerto Rican soldiers, helminthic infestation began to be encountere in routine stool examinations - never because of primary complaints. Schistosomiasis was also met to a much lesser extent. Both conditions were treated on an out-patient basis.

#### Filariasis:

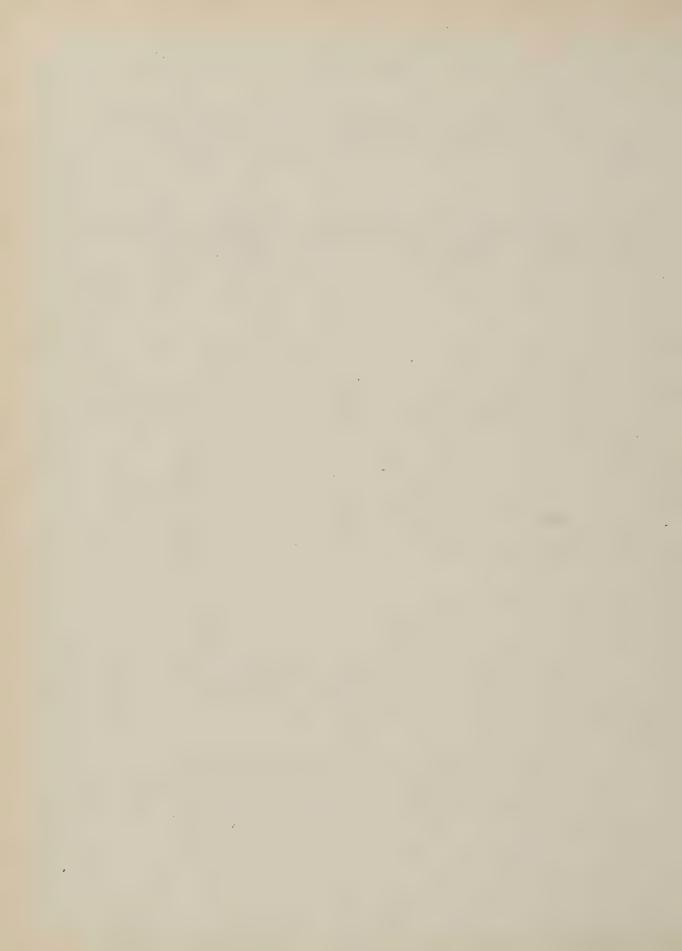
Filariasis has never been recorded among American troops. This is surprising considering the fact that the disease is present in about 5 = 10 percent of the local population, 53 which fact can be confirmed by the high frequency of elephantiasis among natives of the lower class.

Typhus:

Typhus has never been diagnosed in the hospital. In town two or three cases of the murine type occur every year. In its transmission the rat found on the island - Ratus norwegian - is a link.54

Dengue:

Dengue, likewise, is not found in the hospital records. Several cases of cryptogenic fevers, however, have been encountered which might have been labeled as such torpical fever.



### WALLER FIELD AIR BASE DISPENSARY

Venereal Diseaser

Venereal disease is one of the principle causes of lost man days in the Army. The negro population of the Island of Trinidad by far exceeds all other races. The opportunity for infection of the soldier were, and are, numerous and a very large percentage of the populace are active carriers. The social life of the soldier was practically negligible so far as association with white females were concerned, and consequently association with the colored females were numerous. The morals of the local colored females being apparently low, and prostitution flourishing, the opportunity for sexual contacts was great and consequently a contributing factor in the rate.

The towns are located nearby, namely Port of Spain and San Fernando, the transportation to Port of Spain for the enlisted soledier was fairly good. The percentage of English and other white families at the town of San Fernando was greater than any other town on the Island. Transportation in the method of established bieweekly convoys was permitted there. As a result the venereal disease rate of Waller Field usually was lower than other organizations.

A venereal disease program was always carried on at the Air Base and consisted of at least one monthly lecture and showing of film to all the personnel of the Air Base. The lecture was three-fold including talks by the Commanding Officer Air Base, Chaplain, and Medical Officer. Full use was always made of posters, pictures, and bulletin boards of organizations with prophylactic station locations placed thereon.

An intensified anti-venereal disease program was outlined by Antilles Department and put into effect 7 December 1944 as outlined in Training Memorandum No. 15, Headquarters Antilles Department. Training Memorandum No. 17, Headquarters Antilles Department, was published 23 January 1945, and served as a guide for Medical Officers acting as Venereal Disease Control Officers. The outlined program was very comprehensive. The efficacy of said program cannot be estimated because of the constantly changing of Air Base personnel during that period.

The largest portion of the venereal disease encountered in the Dispensary was acute gonorrhea. The number of primary syphilitic lesions seen were small. When a positive darkfield or positive blood Wasserman was found and reported as such by the Hospital, treatment was instituted and continued at the Hospital until the patient rendered non-infective. Then the remainder of the bismuth and mepharsen injections as prescribed in Circular Letter No. 74, War Department, Office of The Surgeon General, dated 25 July 1942, were given at the Dispensary. The spinal fluid examination was done at the Hospital. When the therapy of syphilis was altered to conform with War Department Technical Bulletins No. 106 and 198, dated 11 October 1944 and 20 August 1945, respectively, using penicillin as the drug of choice, all treatments were given at the Hospital.

The diagnosis of gonorrhea was made by finding gram negative intracallular diplococci in smears of urethral exudate or in smears of a centrifuged specimen of urine. The original plan of treatment was in accordance with Circular Letter No. 74, War Department, Office of The Surgeon General, 25 July 1942. The outlined program of treatment consisted of oral sulfathiazole, of sulfadiazene grams i q.i.d. for five days. This to be repeated in five days if no response was gotten from the first course of sulfa. The recommended dosage was found to be too small for effective results. The prescribing of grams vi the first and second days and grams i t.i.d. for the next six days proving more effective. Urine analyses and blood smears were done on the patient routinely in the above dosage schedule. As prescribed in the Circular, if no results or cure were derived after two courses of the sulfa drug, the patient was admitted to the Hospital for further treatment. Medical Technical Bulletin No. 16. dated 6 March 1944, prescribed the use of penicillin if the patient did not respond to one course of the sulfa drug. Technical Bulletin No. 96, dated 21 September 1944, prescribed penicillin as the drug of choice in the treatment of gonorrhea. The recommended dosage was 100,000 units given intramuscularly over not less than an eight hour period of time.

The results obtained with penicillin proved to be excellent, not more than 3 percent proving to be resistant. The initial plan was to give 20,000 units every three hours, however better results were obtained with 25,000 units given every two to two and one-half hours.

The complications of gonorrhea seen were few in number. The most frequently seen complication was a mild prostatitis, which responded readily to prostatic massages twice weekly and the use of mild local urinary irrigations. The determination of cure of a case of gonorrhea consisted of the inability to demonstrate the causative organisms in urogenital fluids, including prostatic secretions, by smears or cultures. The tests were made three days after the disappearance of symptoms in an acute case, or six days after disappearance of symptoms in a case of prostatitis.

#### VENEREAL RATES

(per 1000/yr)

1941	1942	1943	1944	1945
Nov 24.0 Dec 21.6	Jan 46.0 Feb 45.7 Mar 24.04 Apr 47.75 May 49.0 Jun 77.0 Jul 32.0 Aug 57.8 Sep 32.0 Oct 12.6 Nov 6.6 Dec 1.1	Jan 32.1 Feb 55.4 Mar 27.1 Apr 39.9 May 44.3 Jun 61.0 Jul 43.0 Aug 46.1 Sep 65.8 Oct 52.0 Nov 32.5 Dec 78.0	Jan 12.4 Feb 24.2 Mar 21.2 Apr 59.4 May 55.0 Jun 42.4 Jul 41.6 Aug 00.0 Sep 9.84 Oct 57.2 Nov 00.0 Dec 00.0	Jan 33.8 Feb 35.4 Mar 00.0 Apr 18.0 May 35.97 Jun 00.0 Jul 21.4 Aug 00.0 Sep 00.0 Oct 00.0 Nov Dec

#### Malaria:

Mosquito control for the entire post (including the Air Base) was under the U.S.E.D. hospital staff until 17 October 1942. when it was taken over by the Post Engineer. The principle control measures were oiling, filling and grading, drainage and flood control, and foliage inspection, together with screening and use of mosquito nets and repellents. All trees in the area with attached Bromeliads growth were chopped down, burned, or stripped of the growth. The 392nd Malaria Control Laboratory was inaugurated at Fort Read in January 1943 and had the responsibility of mosquito control for the entire reservation. The responsibility at the Air Base was one of individual mosquito discipline consisting of each man adequately using nets, clothes, and mosquito repellents. In March 1945, the spraying of DDT was started. The first plane used was an L-4, then an L-1, then a C-47, and a B-25 is now contemplated. With the use of DDT the malaria rate decreased and the mosquito count was practically zero. The program on the Base has been so effective that it is now felt malaria is not contracted on the Base.

#### MALARIA CASES

Year	Month	Primary	Recurrent	Total	Net. Inc.	Neto Dec.
1942	May Jun Jul Aug Sep Oct Nov Dec	8 9 2 8 11 17 8 5	0 0 0 0 0 4 11 4	8 9 2 8 11 21 19 9	0 1 0 6 3 10 0	0 7 0 0 0 0 2
1943	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec	2 0 9 5 7 5 9 11 9 6 7 6	5 4 4 9 4 3 7 4 10 1 2 3	7 4 13 14 11 8 16 15 19 7 9	0 0 9 1 0 0 8 0 4 0 2 No Che	2 3 0 0 3 3 0 1 0 12 0

## Tropical Dermatoses:

Were fairly common among the personnel, epidermophytoses, tenia cruris, and external otitis were those most commonly encountered. The epidermophytoses were largely the interdigital and vesiculo-pustular types, with the former predominating. Treatments were varied as to types, and few if any can be said to have proved specific. In the vesiculo-pustular type, the vesicles were opened and due caution taken in regards to secondary infection occurring, of which few cases were seen. The treatment then was similar to that used for the interdigital type. Wet dressings or soaks were used in the presence of secondary infection or cellulitis. The solutions used were varied consisting of potassium permanganate (1-18,000-1-9,000), aluminum acetate (1:200), or magnesium sulphate (saturated solution) or boric acid (1:25). Results were good with all of the above, each case presenting an individual response. The best results were obtained with potassium permanganate or magnesium sulphate solutions used fifteen minutes toid.

After the disappearance of the cellulitis, or on an initial case without cellulitis, kerolytic agents were used. Those

found most efficacious were 3 percent salycilic acid in tincture of mercresin or tincture of metaphen, and castillanis paint, applied t.i.d. A preparation used extensively and found to be extremely efficient and fungicidal in initial cases without cellulitis was the following powder:

Rx

Salycilic acid grams 5
Menthol 2
Camphor 2
Boric Acid 30
Starch 30

Mix and make a powder Sig: Dust on feet toiodo

The average duration of treatment was five to six days with no lost time. Hygienic conditions consisting of frequent foot bathing and change of socks, in addition to the above, were counseled.

Tenia cruris was next most frequently encountered, mainly the nonvesicular type. The treatment here closely followed the above and the preparation used with greatest success was the dusting powder given in the above prescription.

There was found to be a high incidence of otomycoses and frequently three to five percent of the command were affected. The types of treatment used were varied as were the results obtained. It was observed that a small accumulation of wax in the canal prevented the occurrence of otomycoses. Personnel were cautioned to thoroughly dry the ears following showering or bathing. Personnel using head sets, as for example members of an air crew or radio detachment, were advised preferably to have assigned head sets used only by themselves. In all cases it was advised that the head sets be wiped off with alcohol at least once daily.

Symptoms of otomycoses varied with the severity of the infection. In mild cases the predominating symptoms were itching, burning, and discharge. If a large exudative mass was present there was occasionally some diminution of hearing. In severe cases the above were present plus severe pain in the affected ear, especially aggravated by mastication. Examination revealed fungus growth which may or may not include the drum depending upon the severity, and tympanitis, and low grade temperature.

Treatment was varied and the responses to the treatment were of an individual nature. General treatment in the more severe cases consisted of sedation, heat to the affected ear, and local

treatment. The method found most suitable for application of heat was a large lamp. Local treatment depended upon the severity of the external otitis. In all cases it was necessary to remove the exudate, in the severe cases the cellulitis and pain were allowed to subside before this was done. The instillation of 3-1/2 - 7 percent hydrogen peroxide was made, allowed to remain for five minutes, then the affected ear was gently syringed, and then dried with cotton wicks, this was repeated each day until the complete removal of all exudate and debris was accomplished. The use of applicators in the removal of epithelial debris and exudate was omitted due to the usually accompanying trauma to the canal and resulting furunculosis.

Following the syringing each day the instillation of some local application was practiced. Those used were varied as were the results obtained. The best results were obtained with the use of cresatin and 1 percent thymol. Good results also were obtained with the use of 3 percent aluminum acetate solution, and 5 percent algyrel solution. A wick saturated with any of the above was placed in the canal and the patient given some medicine to apply directly to the wick toiod, so as to keep it moist. After approximately 2 = 5 days of the above therapy 3 qtts, of the solution being used was applied by the patient directly in the ear toiod, no wick being used. Daily examinations and treatments were given to the patients in the Dispensary, and the average duration of the otomycoses was 5 = 7 days. Poor results were obtained with insufflations of powder.

# 338TH MEDICAL DISPENSARY PORT-OF-SPAIN

## Venereal Disease:

Statistics pertaining to Venereal Diseases from 1943 to 1945 are as follows:

January 1943	Syphilis 1 Gonorrhea 1 Other Venereal Diseases 0  Number of prophylactic treatments administered during the month - 1,448
February 1943	Syphilis 0 Gonorrhea 1 Other Venereal Diseases 3
	Number of prophylactic treatments administered during the month - 2,507
March 1943	Syphilis 0 Gonorrhea 5 Other Venereal Diseases 2
	Number of prophylactic treatments administered during the month - 1,619
April 1943	Syphilis 1 Gonorrhea 3 Other Venereal Diseases 2
	Number of prophylactic treatments administered during the month - 1,713
	Rate per 1,000 per annum - 46.4

May 1943	Syphilis 1 Gonorrhea 1 Other Venereal Diseases 1
	Number of prophylactic treatments administered during the month - 1,878
,	Rate per 1,000 per annum - 26.1
June 1943	Syphilis 0 Gonorrhea 2 Other 2
	Number of prophylactic treatments administered during the month - 2,392
July 1943	Syphilis 0 Gonorrhea 4 Other 2
	No. of prophylactic treatments administered during the month = 2,473
	Rate per 1,000 per annum - 42
August 1943	Syphilis 0 Gonorrhea 1 Other 0 No. prophylactic treatments administered during the month - 2,471
	Rate per 1,000 per annum - 08.1
September 1943	Syphilis 2 Gonorrhea 3 Other 0
	No. prophylactic treatments administered during the month - 2,423
<i>*</i> .	Rate per 1,000 per annum - 34.5
October 1943	Syphilis 0 Gonorrhea 3 Other 1
	No. prophylactic treatments administered during the month - 2,330
	Rate per 1,000 per annum - 21.7

November 1943	Syphilis 0 Gonorrhea 3 Other 0
	No. prophylactic treatments administered during the month = 2,770
	Rate per 1,000 per annum - 20.2
December 1943	Syphilis 0 Gonorrhea 6 Other 11
	No. of prophylactic treatments admin istered during the month - 3,973
	Rate per 1,000 per annum - 31.1
January 1944	Syphilis Gonorrhea Other  0
	No. prophylactic treatments administered during the month = 3,532
	Rate per 1,000 per annum - 18.3
February 1944	Syphilis 1 Gonorrhea 3 Other 0
	No. prophylactic treatments admin- istered during the month - 2,537
	Rate per 1,000 per annum - 23.5
March 1942	Syphilis 2 Gonorrhea 1 Other 0
	No. prophylactic treatments administered during the month = 4,512
	Rate per 1,000 per annum - 37.9
April 1944	Syphilis 0 Gonorrhea 5 Other 3
	No. prophylactic treatments administered during the month - 3,041
	Rate per 1,000 per annum - 38.7

May 1944	Syphilis 0
	Gonorrhea 7
	Other
	No. prophylactic treatments administered during the month - 1,732
	Rate per 1,000 per annum - 48.0
June 1944	Syphilis 0 Gonorrhea 3 Other 0
	No. prophylactic treatments administered during the month - 1,789
	Rate per 1,000 per annum - 49.2
July 1944	Syphilis 0
	Gonorrhea 3
	Other 2
	No. prophylactic treatments admin-
	istered during the month - 1,531
	Rate per 1,000 per annum - 28.3
August 1944	Syphilis
	Gonorrhea 2
	Other
	No. prophylactic treatments administered during the month - 1,413
	Rate per 1,000 per annum - 32.7
September 1944	Syphilis 0
•	Gonorrhea 1
	Other
` , A	No. prophylactic treatments administered during the month - 1,698
	Rate per 1,000 per annum - 20.4
October 1944	Syphilis 0 Gonorrhea 1 Other 0
	No. prophylactic treatments administered during the month - 1,730
	Rate per 1,000 per annum - 25.5

November 1944	Syphilis Gonorrhea Other	0 1 0
	No. prophylactic trea istered during the mon	
	Rate per 1,000 per an	num - 23.55
December 1944	Syphilis Gonorrhea Other	. 0
e.	No. of prophylactic to ministered during the	
	Rate per 1,000 per an	num 0
January 1945	Syphilis Gonorrhea Other	0 1 0
	No. prophylactic trea istered during the mor	
	Rate per 1,000 per an	num - 30.8
February 1945	Syphilis Gonorrhea Other	0 2 0
	No. prophylactic trea istered during the mo	
	Rate per 1,000 per an	num - 38.9
March 1945	Syphilis Gonorrhea	0 2
	Other	Õ
		0 tments admin-
	Other No. prophylactic trea	0 tments admin- nth - 1,987
April 1945	Other  No. prophylactic trea istered during the mon	0 tments admin- nth - 1,987
April 1945	Other  No. prophylactic trea istered during the modern state per 1,000 per and Syphilis Gonorrhea	tments admin- nth - 1,987  num - 38.3  0 0 1 tments admin-

May 1945	Syphilis 0 Gonorrhea 0 Other 0
	No. prophylactic treatments administered during the month - 1,629
*,	Rate per 1,000 per annum - 0
June 1945	Syphilis 0 Gonorrhea 2 Other 0
	No. prophylactic treatments administered during the month - 3,587
	Rate per 1,000 per annum - 31.0
July 1945	Syphilis 0 Gonorrhea 0 Other 0
	No. prophylactic treatments administered during the month - 3,400
	Rate per 1,000 per annum - 0
August 1945	Syphilis 1 Gonorrhea 0 Other 0
	No. prophylactic treatments administered during the month - 2,567
	Rate per 1,000 per annum - 26.4
September 1945	Syphilis 1 Gonorrhea 0 Other 0
:	No. prophylactic treatments administered during the month - 2,221
•	Rate per 1,000 per annum - 30.0
October 1945	Syphilis 1 Gonorrhea 0 Other 0
	No. prophylactic treatments administered during the month - 1,648
	Rate per 1,000 per annum - 23.9

Malaria:

Since the organization of this dispensary, 1 April 1944, only five cases of malaria have been recorded:

	Continental	Troops	Insular Troops
April 1944 July 1944	2	•	2

The 392nd Medical Malaria Control Detachment, operating at Fort Read, handled the malaria work of this area. A history of that unit will include all reference to this disease that might be included at this point.





Venereal Disease:

Venereal Disease Problem:

Civilian:

The civilian population affords an ample reservoir of all the venereal diseases. The local government does not license or openly countenance organized prostitution, but definite houses are available and may be readily found upon application to almost any taxi driver. In addition, a large percentage of soldiers trace their disease casual "pick-ups;" the widespread availability of girls of this type is a factor which must be recognized as any program of venereal disease control.

Army:

As is shown in the accompanying tables, the first troops arriving at this Post had a high incidence of infections. This was true of both white and colored troops; among the latter the rate was much higher, primarily because these men were not concerned with the racial barriers which inhibit to a certain extent promiscuity among the white troops. Contributing factors in this high incidence of disease are several. One of the major factors was the availability of sexual contacts in the adjacent small towns and communities where prophylactic facilities did not exist. Of importance also is the fact that several months are necessary for the establishment of a well integrated educational program, and the time interval between the institution of this program and the reduction in the number of cases occurring.

As may be seen from the statistical charts, the noneffective rate decreased during the year 1943. This decrease may
be seen to be due primarily to a decrease in incidence of venereal
disease, rather than a reduction in the days lost per case ratio.
In December 1943 penicillin became available for sulfonamide resistant gonorrhea, and in October 1944 the duty status of gonorrhea with
penicillin was instituted. Both of these advances caused a moderate
reduction of days lost per case. The greatest factor, however, in
the reduction of the non-effective rate has been the drastic reduction in the incidence of venereal disease.

### Venereal Disease Control Program:

The venereal disease control program has been under the direct supervision of the Post Commander who has put the responsibility of control of venereal diseases squarely upon the unit commanders. A Staff Officer of Headquarters, Fort Read has been appointed venereal disease control officer for the Post. This officer functions to correlate the program between the various units.

It has been the responsibility of the Medical Department to provide instruction for the troops, and especially for the company officers and non-commissioned officers. Medical Officers also supervise the operation of prophylactic stations.

An attempt has been made to locate contacts of venereal disease and refer these to the local medical officers for treatment. However, since the majority of men infected with venereal disease do not know the names or addresses of their contacts, this has proved to be of minor importance in the control program in this area.

Treatment of venereal diseases has followed current practice. No unusual treatments have been used. Results are much the same as those experienced elsewhere. Since the institution of penicillin treatment for gonorrhea, no patient has been evacuated to the United States or Puerto Rico for treatment of this disease. Syphilis has apparently responded well to both arsenical and penicillin therapy. Chancroid and lymphogranuloma inguinale have offered no unusual difficulties. The diagnosis of granuloma inguinale has been made in two (2) cases by the demonstration of Donovan bodies in the exudate; both cases responded to treatment with fuadin.

Educational measures have been of prime importance in reducing the incidence of venereal disease. Since the command responsibility in the control program has been fully recognized, it has been possible to instruct the company officers and non-commissioned officers concerning venereal disease and have them transmit this information to the troops. A monthly meeting has been held between the unit surgeon and the company officers and non-commissioned officers; these officers and non-commissioned officers conduct weekly instruction of the enlisted men in groups of twenty-five (25) or less. In this way it has been found possible to acquaint the entire command with the essential facts of venereal disease and its control. Exaggeration of the physical effects of venereal disease has been particularly avoided because of the real danger of creating phobias which would prove more difficult in treatment

than a case of venereal disease. Emphasis has been placed entirely on the fact that venereal diseases are disgusting and unnecessary; an excellent change of complete cure has been promised provided that early treatment is instituted. Educational films and posters have been utilized; however, most reliance has been placed on the weekly meetings within the company.

In 1942 prophylactic stations were established in San Fernando and Port of Spain, as well as in several towns. Exposed men visited these stations reasonably well, provided that exposure occurred in an area where these stations were established. A special problem was presented by the isolated gun positions of a colored anti-aircraft regiment. It was found that exposures occurred in the vicinity of these stations. Accordingly each of the larger stations was equipped with prophylactic facilities complete with straddle sink and the smaller positions were supplied with individual prophylactic materials and hot water. A policy was established so that no criticism was directed against a man for using these facilities at any time, even though he was on duty at the time. The incidence of venereal diseases at these stations was reduced by this means. As the Base declined in size, it was found to be impracticable to maintain prophylactic stations at the smaller villages. Therefore, those at Port of Spain and San Fernando were maintained and other areas frequented by soldiers were declared "off limits." This policy has made possible the establishment of large centrally located and well equipped prophylactic stations and has limited exposure to areas adjacent to these.

No attempt at control of prostitution has been made.

Venereal Disease at Fort Read has been a problem primarily because of prevalence and not because of special difficulties and diagnosis and treatment. Incidence of new cases of venereal diseases is shown in the attached charts. The majority of the cases of venereal disease have been acquired through sexual contact with women of the local population. No unusual means of transmittal have been noted.

# Syphilis:

Records of the 359th Station Hospital, Fort Read, Trinidad, B.W.I. show the following cases of syphilis, not all of which were attributable to this Post:

Primary syphilis		382
Secondary syphilis		74
Tertiary syphilis		3
Syphilis, unclassified		- 58
Neurosyphilis		. 6

. Treatment has followed current recommendations of The Surgeon General. No unusual treatments have been used. Six (6) cases of neurosyphilis have been diagnosed and have been returned to the United States or Puerto Rico for treatment. No serious reactions to treatment have been observed at this Hospital. One (1) case of exfoliative dermatitis due to Mapharsen treatment of syphilis was transferred to this Hospital from the Station Hospital at British Guiana. This man was treated with bland local medications and sodium thiosulphate 1.0 gram intravenously for eighteen (18) days. Improvement followed and the man was returned to duty. In one (1) case penicillin therapy for secondary syphilis was discontinued on the fourth day of treatment because of persistent fever to 103.4. cyanosis, and delirium. Within twenty-four (24) hours following cessation of treatment, temperature was normal and, after a short period of convalescence, this patient was started on a twenty-six (26) week course of mapharsen and bismuth. This treatment was tolerated well.

#### Gonorrhea:

Gonorrhea, as is shown on attached charts, has been the most frequent venereal disease found in this area. Treatment has followed current recommendations of The Surgeon General. No unusual treatments have been used.

From May 1942 until December 1943 seventeen (17) cases of gonorrhea were returned to general hospitals in the United States or Puerto Rico because of sulfonamide resistant gonorrhea. In December 1943, penicillin became available for the treatment of sulfonamide resistant cases of gonorrhea. No patient has been evacuated because of treatment resistant gonorrhea, since that time. In October 1944 the ambulatory treatment of new gonorrhea with penicillin was authorized. Since that time only two (2) new cases have been admitted to the Hospital, both of these because of lack of penicillin at their dispensaries. Thirteen (13) chronic cases of gonorrhea have been admitted to the Hospital since October 1944; all have responded to treatment with penicillin. No unusual reaction to the treatment of gonorrhea with penicillin has been observed.

#### Chancroid:

Diagnosis of chancroid has been made at the 359th Station Hospital five hundred and fifty-eight (558) times since May 1942. Diagnosis of chancroid has been made where there appeared a definite ulcerative lesion of the penis which could not be attributable to other diseases. No effort at identification of the Ducrey's bacillus has been made. Treatment has been with sulfonamide powder applied locally. Response has been generally satisfactory. No cases have occurred which required evacuation to the United States.

SUMMARY OF VENEREAL DISEASE CASES
FORT READ, TRINIDAD, B. W. I.
1942

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SUMMARY OF VENERRAL DISEASE CASES FORT READ, TRINIDAD, B. W. I. 1943

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X Figures for these mouths include ground forces only.

Appreximately 400 Insular Troops included among continental white. Þ¢



SUMMARY OF VENERBAL DISEASE CASES FORT READ, TRINIDAD, B. W. I. 1944

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### Granuloma inguinale:

Two (2) cases of granuloma inguinale have been seen; in both cases typical Donovan bodies were found in smears from the lesions. Both men were soldiers; one was colored, the other white (Puerto Rican). Treatment consisted of intra-muscular fuadin. Both cases responded.

## Lymphogranuloma inguinale:

Diagnosis of lymphogranuloma inguinale has been made thirty-four (34) times at the 359th Station Hospital. Diagnosis has been made on the basis of tender inguinal adenopathy with fever plus a positive Frei Test. Treatment has been bed rest plus systemic sulfonamide therapy. Suppuration of the glands requiring evacuation of the necrotic material has been rare. Convalescence has been satisfactory in all cases.

Emphasis has been placed on instruction of officers and key non-commissioned officers who, in turn, instruct the enlisted men in small groups. Large, well equipped prophylactic stations have been maintained in central areas, while all areas from which a man could not reach one of these prophylactic stations have been declared \*Off Limits.\* No attempt at control of prostitution has been made.

#### Malaria:

Malaria of all types has accounted for 8.7% of admissions to this Hospital from its activation to the present time. There has been a total of one thousand one hundred and forty-two (1,142) primary and recurrent cases. Classified as to type of causative parasite there have been eight hundred and seven cases due to Plasmodium vivax, three hundred and eight (308) to Plasmodium falciparum, one (1) to Plasmodium malariae, twelve (12) cases of mixed infection and fourteen (14) unclassified.

Beginning in December 1942 all cases have been treated with atabrine. Prior to that time quinine and atabrine combinations were used. The majority of cases admitted to this Hospital in its beginning received atabrine according to the following scheme: 0.5 gram on admission followed in eight (8) hours by 0.4 gram then eight (8) hours later by 0.3 gram. Treatment was then stopped. It was apparently felt that this was sufficient therapy inasmuch as the patients became afebrile within twenty-four (24) to thirty-six (36) hours and the blood smear free from parasites at the end of a like period. As might have been suspected, however,

this treatment was inadequate as evidenced by statistics taken from the Malaria Control Laboratory at this station which show that in March 1943, 34.9 percent of all Vivax recurrences occurred within one (1) month of the initial attack. These records show similar rates of recurrence for succeeding months until June 1943 when this method of treatment was dropped. In connection with this routine of therapy it is also significant that the pigmentation of the skin from this rapid method of dosage was marked. There was a high incidence of nausea, vomiting and abdominal discomfort. Since August 1943 all cases of malaria at this hospital have received atabrine in accordance with S.G.O. Circular Letter #153. 19 August 1943. "Follow Up" therapy is now given for ninety (90) days, and ferrous sulphate gr V is given to all patients. The average period of hospitalization has been eight (8) days. For Vivax infection the average febrile period is three (3) days with negative smear by the fifth day. In cases due to Plasmodium falciparum, the febrile period averages five (5) days with negative smears on the sixth to the seventh day. The usual yellow pigmentation of the skin has been seen, but none of the other skin manifestations which have been attributed to atabrine have been observed. Only occasional complaints of mild abdominal cramping are noted. There has been one (1) case of toxic psychosis attributed to the drug. This occurred on the sixth hospital day and was manifested by moderate disorientation and delirium and amnesia lasting about seven (7) days: Recovery was complete.

All the possible complications of malaria have been seen, the most frequent being secondary anemia, bronchitis and bronchopneumonia. Incidence of severe kidney damage has been low and it is significant that there have been no cases of blackwater fever. In one (1) case of tertian malaria, there were marked bilateral retinal hemorrhages which occurred on the third hospital day. The area of hemorrhage involved the macular region of left eye causing moderate loss of vision.

Record is found of four (4) cases of "cerebral" malaria, all due to Plasmodium falciparum. There was recovery in three (3) cases with one (1) death recorded. This occurred in October 1942 and was a case of estivo-autumnal malaria with cerebral manifestations complicated by bronchopneumonia. There is no record of a case of "cerebral" malaria since January 1943.

While malaria has been by far the most frequent and important single disease at this Base, it should be said in conclusion that as control measures have improved, its incidence has decreased sharply thereby rendering it less and less a problem. Evidence of this can be seen in the fact that from 1 January 1945 to the present time there have been only one hundred and twenty-five (125) admissions due to malaria.

In view of the fact that the 392nd Medical Malaria Control Detachment rendered a complete historical report on all phases of Malaria Control for this Command this subject will not be discussed further in this unit History.

#### Enteric Diseases:

In order to control the incidence of diarrhea, enteritis and dysentery close supervision of all organizational messes has been maintained. All buildings are screened, there is an adequate water-borne sewerage system. Garbage is carried away daily and disposed of by a modified sanitary fill method which is located at a sufficient distance from any populated parts of the Post. All mess personnel are given a monthly physical examination and are examined periodically while on the job.

Dysentery, bacillary and amebic, have constituted no problem in the Trinidad Base Command, and their incidence has been remarkably low. Careful examination of food handlers, with periodic stool examinations has probably been largely instrumental. Few native restaurants are patronized by military personnel and only those establishments which were approved by medical inspectors were placed on limits.

For the period May 1942 to October 1945 there have been only eight (8) cases of amebic dysentery hospitalized among military personnel. No new cases of amoebic dysentery have occurred since May 1944 and no new cases of bacillary dysentery have appeared since January 1945. In all cases the diagnosis was based on actual discovery of the causative organism in the stools. In all bacillary cases the organism Shigella paradysenteriae was cultured from the stools by the usual methods. No attempt was made to determine the strain.

One case of amoebic dysentery, an Army Nurse, had had periodic bouts of diarrhea for several years and developed moderate diarrhea ten (10) days after arrival in Trinidad. She was considered to have had the disease for some time and, since cysts continued to appear in the stools after intensive hospital and ambulatory treatment, carrier state was diagnosed. In view of her occupation as a nurse and a food handler she was evacuated to a general hospital to avoid spread to hospital patients.

One small circumscribed epidemic of amoebic dysentery occurred in January and February 1944. Two (2) officers and three (3) enlisted men developed diarrheal symptoms while attending the School of Jungle Warfare from November 1943 to January 1944.

Symptoms began almost simultaneously in the latter part of January. One of the patients was the Unit Medical Officer. Both officers and enlisted men at in the same mess. Four (4) cases were hospitalized shortly after the appearance of symptoms, and Endamoeba histolytica was recovered from their stools. Shortly afterwards an epidemiological investigation revealed that one (1) of the cooks in the mess harbored the organism. He had experienced mild gastro-intestinal symptoms for several months but had not reported on sick call because he felt that his periodic diarrhea was due to drinking beer. All cases responded rapidly to the usual forms of treatment.

Treatment of amoebic dysentery varied somewhat with the Medical Officer in Charge, but consisted chiefly of emetine hydrochloride and Carbasone in standard dosage. Chiniofon and Diodoquin were used to a lesser extent than Carbarsone, but seemed equally effective.

Of the common diarrheas there were two hundred and forty-three (243) cases classified in the following manner: enterocolitis 39; gastroenteritis 95; colitis 39; diarrhea 15; and enteritis 55. On the whole, these conditions were of short duration and treatment was usually only symptomatic. Sulfaguanidine was not extensively used. In the majority of cases no bacteriological diagnosis was made.

Only one epidemic of food poisoning occurred in the period from May 1942 to October 1945. This originated in the 41st General Hospital Mess. On 3 October 1943, fifty (50) persons required hospital treatment for severe gastro-intestinal symptoms. Of these, fourteen (14) were Medical Department hospital personnel, thirty (30) were patients already hospitalized for other reasons, and six (6) were native K.P. 's. Symptoms were remarkably uniform and appeared almost simultaneously and consisted of rather sudden onset of epigastric pain and cramping, nausea, vomiting, diarrhea, headache and weakness. Fever was generally absent. Epidemiological investigation revealed that all of this group had partaken of "chicken pie" at the noon meal. This chicken had been cooked sixteen (16) hours previously and had been allowed to lie about at room temperature before processing into "chicken pie." Bacteriological studies of the suspected material revealed the presence of hemolytic staphylococcus albus. The sudden onset of symptoms with 2-3 hours after the offending meal, the absence of pathogenic organisms in the stools, and the fact that the food was re-cooked before serving indicate the role of a preformed enterotoxin in this epidemic. Treatment was symptomatic and the average period of hospitalization was two (2) days.

#### Helminthic Infections:

Uncinariasis - there has been a low incidence of this condition within this Command. For the most part it occurs in Puerto Rican troops who have been infected before their arrival here. However, in order to keep this type of infection to a minimum along with the other intestinal parasitic diseases, all personnel are required to wear shoes outdoors and fortunately the Post Exchange has been able to furnish for sale shoes of a suitable type for use in the barracks. In addition rigid sanitary discipline has been carried on in the living quarters. Outdoor latrines have been provided for native personnel at numerous points on the Post so that they will not defecate on the ground. These methods have kept this type of infection to a minimum.

Helminthic infestations have presented no particular problem in this Command. Helminthiasis is usally a secondary diagnosis and has been recorded in only fifty-nine (59) cases at this installation. Of these cases 70 percent were Ankylostomiasis. The incidence of helminthic infestations in Continental personnel has been quite low, however, in Insular personnel the incidence is much higher. In the first part of 1945 routine stool specimens were obtained from one hundred and thirty-six (136) consecutive Insular admissions, of which 32 percent were positive for one or more of the common helminths. In none of these cases was there any correlation between the presenting complaints, final diagnosis, and the intestinal parasites found. Therapy of the helminthic infestations has been by standard accepted methods and no untoward reactions have been noted.

#### Schistosomiasis:

The intermediate Molluscan host necessary to complete this life cycle of Schistosoma mansoni is not found in Trinidad. This disease, however, is found in Puerto Rico and six (6) cases of schistosomiasis have been diagnosed at this Hospital in Puerto Rican personnel. When the U.S. Army first arrived in Trinidad all of the rivers and creeks on the Post were surveyed to determine whether the snail was present and none was found.

Schistosomiasis is endemic in Puerto Rico and, although there are approximately two thousand three hundred (2,300) Insular troops served by this Hospital, schistosomiasis has appeared in the records of this Hospital as a diagnosis only six (6) times. All cases were in Insular troops. Two (2) cases were returned to the 161st General Hospital, the remainder were treated symptomatically since the infection was mild and the symptoms seemed well ameliorated on this regime.

There have been no intermediate Molluscan hosts of Schistosoma mansoni found on the island of Trinidad.

Filariasis:

Filariasis is endemic in Trinidad. Although the exact incidence in the native population is not known, recent surveys of native employees on the Post indicate an incidence of approximately 2 percent. An additional reservoir of the disease is furnished by infected Insular troops stationed on the Post. The number of microfilaria positive Insular troops has never been high, and at present there are approximately ten (10) such individuals on the Post. Control measures are those directed against the mosquito population for malaria control, including application of DDT in barracks for residual effect. Native employees who are positive for microfilaria are excluded from working on the Post at night.

There are approximately seventy-five (75) Insular troops at this station who have had on one or more occasion a positive blood serum for Wuchereria bancrofti. There have been, however, only nine (9) admissions in which a diagnosis of filariasis has been made and in only five (5) cases was this the primary cause of admission. Two (2) of these had sufficient clinical findings to warrant return to the l6lst General Hospital in Puerto Rico. The other three (3) were returned to duty after the acute symptoms subsided. Treatment has been symptomatic supplemented by administration of penicillin and sulfonamide in one (1) case with an acute cellulitis of the leg.

No filariasis has been seen in Continental troops.

Typhus:

Due to the fact that rodents of all types are present on the Post in such small numbers and further due to the rodent control program, this disease has not appeared at all in this Command.

There have been no cases of typhus diagnosed in this Command.

Dengue:

Dengue has been diagnosed forty-three (43) times at this Hospital. The majority of these cases have been contracted when the soldier has ventured out of the mosquito controlled area. The extensive Malaria Control Program on Fort Read has reduced the mosquito

population almost to a minimum so there is little chance for the soldier to contract dengue without venturing off the Post. Dengue is endemic in Trinidad.

The incidence of this insect-borne disease in the Trinidad Base Command has not been striking. There have been only forty—three (43) cases of dengue hospitalized during the period of May 1942 to October 1945 and no cases of sandfly fever reported for the same period. It is possible that many of the milder cases of dengue were treated on a duty status or were diagnosed as other disease.

Various vectors of dengue are present in Trinidad, including Aedes egypti and Aedes albopictus, but with the exception of a single small and sharply circumscribed epidemic of nime (9) cases in September 1942,55 no attempt was made to determine specific vectors.

Cases of dengue seen in the Trinidad Base Command have not varied greatly from those seen elsewhere. In most of the cases there was a sudden onset of fever up to 103.0 F with severe temporo-frontal headache, chills or chilly sensations, malaise, anorexia, and generalized aches and pains. Most of the patients complained of severe lumbar and orbital ache. Pains in the hips, knees, and legs were less common, and none presented the severe "bone-ache" described in many texts.

Intensity of the symptoms varied considerably. About a third of the patients exhibited fever up to 105 F with severe headache and malaise. Average duration of fever was five (5) days, and the variation was from three (3) to nine (9) days. A dicrotic fever curve was noted in about half of the cases, and these were usually more severe. Almost all presented a moderate, slightly tender lymphadenopathy of the posterior cervical, occipital and sub-occipital, posterior auricular, sub-mental, axillary and epitrochlear nodes. Inguinal and femoral lymphadenopathy was unusual.

Laboratory studies revealed a leukopenia with progressive relative lymphocytosis during the course of the disease. White cell counts of 2,500/mm<sup>2</sup> were not uncommon in the terminal febrile and convalescent stages. Aberrant forms of the monocytic series, including Turck cells, binucleate transitionals, and large vacuolated lymphocytes, were seen in most of the films during the convalescent stage. About 20 percent of the cases exhibited albuminuria to varying degrees.

Exanthem was noted in only about 10 percent of the cases, and usually only during the second phase of the fever.

Treatment was entirely symptomatic and seemed to have no effect on the course of the disease.

#### Cutaneous Disease:

From May 1942 to October 1945 diseases of the skin have accounted for 6.8 percent of hospital cases in the 41st General and 359th Station Hospitals, constituting a total of eight hundred and ninety-four (894) cases. Figures on the number of cases seen and treated in the dispensaries are not available, although various medical officers estimate that skin disease has constituted about 20 percent of the cases seen on sick call. 5.9 percent of hospital skin cases were transferred to General Hospitals in the United States for further observation and treatment. Specialized skin care by a qualified dermatologist and Roentgen therapist was available only during the period of August 1942 to July 1944.

Climatic environmental factors in the production of skin disorder have not been of great importance except perhaps in the dermatophytoses (30 percent of hospital cases). High relative humidity has prevented thorough drying of shoes and clothing unless hot closets are used. Hot water for bathing has not been generally available, and this situation may have been instrumental in the production of impetigo, folliculitis, furunculosis and other pyodermatous conditions. Despite heavy tropical vegetation, only four (4) cases of plant sensitization have been hospitalized; two (2) of these were specifically attributable to the fruit of the cashew. Anacardium occidentale. A few cases of mild dermatitis of the face with cheilitis were attributed to the mango, Mangifera indica. During the program of eradication of bromeliads (epiphytic aerial breeding places for Anopheles bellator) from the trees about Fort Read and Waller Field several cases of severe dermatitis due to contact with the juice of the manzanillo tree, Hippomane manchinella, were seen among the native laborers.

The general incidence of common cutaneous disease has not varied greatly from that seen elsewhere. (See Table 1). During the period 12 May to 10 September 1945 the picture changed somewhat as a result of the influx of approximately six thousand (6,000) AAF troops from the ETO in preparation for air evacuation of troops. At this time the dermatologic census rose sharply. Among this group the most common cutaneous disorders were the pyodermas, dermatophytoses, and scabies. Most of the pyodermas originated in Italy and were extremely resistant to the usual forms of treatment.

Basic principles of dermatologic treatment have, in general, been followed in the hospital. Wet dressings in the acute eczemas have consisted chiefly of saturated boric acid solution, Burrow's solution, and 1:10,000 solution of potassium permanganate. Azochloramid was used infrequently. No cases of boric acid intoxication have been seen. Sulfonamides topically as well as systemically

were used chiefly in the pyodermas, but penicillin locally and intramuscularly has proven superior. Weak aqueous solutions of penicillin (200-300 units per cc.) used as compresses under cellophane have proven very effective in the treatment of infectious eczematoid dermatitis. Until recently, benzyl benzoate was not available for the treatment of scabies. Fungicidal ointment 1322050 has not been used. Therapeutic ultraviolet lamps have been available only since May 1945.

From August 1942 to July 1944 superficial Roentgen therapy was employed by the Dermatology Service. The Picker Field Unit was used. Three hundred and eighty—two (382) treatments were given to one hundred and sixteen (116) patients, fifteen (15) of which were treated for nondermatologic conditions, an average of 3.2 treatments per patient. These figures include U. S. military, U. S. civilian, and British military personnel. Analysis of these cases appears in Table 2.

Dermatitis medicamentosa has been seen in only .016 percent of hospital admissions (twenty-two (22) cases) and has constituted only 2.67 percent of hospital dermatology cases. Sulfonamides accounted for six (6) cases (three (3) each for sulfanilimide and sulfathiazole). In these cases the drug had been administered by mouth and the eruption cleared quickly on discontinuance of the drug. Other drugs were incriminated to the following degree: Calomel (prophylactic ointment) 2; benzyl benzoate 1; salicylic acid 1; sulfur 3; iodides 1; phenol 1; crysarobin 2; neosalvarsan 1; mapharsen 2; and penicillin 1. In several patients undergoing penicillin treatment for syphilis an acute vesicular eczema was noted at the site of previous chronic dermatophytoses.

Because of chronicity, unsuccessful treatment, and lack of full facilities for dermatologic care, 5.9 percent of hospitalized skin cases required evacuation to general hospitals. These constituted only 1.82 percent of all evacuated cases. Puerto Rican troops accounted for only four (4) cases (one each of dermatophytosis, infectious eczematoid dermatitis, lupus erythematosus, and lichen planus). Analysis of evacuated patients appears in Table 3.

TABLE I

GENERAL INCIDENCE OF CUTANEOUS DISEASE

Acne vulgaris	•	•	•			•		•	•	•	•	•	•	0	23
Alopecia areata	•	•	•	•						•			•		2
Condyloma acuminata							٠								31
Dermatitis:															
Atopic		4						0							3
Eczematoid															10
Exfoliative .															1
Exudative		_		•						•	•			_	1
Herpetiformis	Ţ,			Ĭ	•			Ĭ	•		•	•			7
Lichenoid						•	•	•	•	•			•		i
Venenata*	•		٠	•	•	•	•	•	•	•	•	•	•	0	18
Medicamentosa	•	•	•	•	•	•	•	•	•	•	•	•	•		22
Unclassified .	•		•	•	•	•	•	•	•	•	•	•	. •		9
Dermatophytosis	•	•	•	•	-	•	•	•	•	•	•		•	•	269.
Eczema seborrheicum	۰			•			•		•	٠	é	•	•	0	30
77 - 13		•	•	• ,	•	•	•	•	•		٠	۰	۰	•	
Epithelioma**	٠		/61				. •		•	•		٠	•	•	3
Erythema multiforme	٠	•	•			٠	•				•	•	•		4
	•		٠	٠	•	•	•	•	•	•	•	•		•	10
Erythema scarlatinif		me	1		ě	9	•		. •	•		,•	•	•	2
Folliculitis								٠						*	21
Furunculosis	٠	٠							6	•					151
Herpes simplex	•				₩ 2		•				6				7
zoster		0	0							•					6
Impetigo contagiosa	•	0	•			Œ		•	٠	۰		•	•	•	37
Intertrigo			.00		٠		0								3
Lichen planus	0	•	9	4	0		•	٥	•		•			•	6
simplex	ė.	6.													.6
Lupus erythematosus	0	0	•		•	0									3
Molluscum contagiosu	m														3 6 6 3 1
												0			13
Miliaria rubra		-	0						•				•		7
Pityriasis rosea .					•										ıi
versicolo			_				٠,	٠ _	•	•	•		•	•	7
Pruritis ani	_	•	•		•		0		*	•		•	•	•	8
Psoriasis	•	•	•	•	•	•	•	•	•	•	•		•	•	14
Pyoderma	•	•	•	•	•	•	_	• .	0	•	•	•	•	•	32
Sycosis vulgaris		•	•	•	0	•	0	•	•	•	•	0	•	•	11
Verruca vulgaris .	•	•	•	•	•		•	•	•	•	•	•		. 0	20
Vitiligo	•		•	•			•						•		
Sunburn		0	•	9	0	0			•	•	•	•	•	0	1
Scabies	•							•	0	0	0	•		0	72
															(1)

<sup>\*</sup> Clothing 1; diesel oil 1; gasoline 2; plant 4; undetermined 10.
\*\* Squamous cell, lower lip 2; basal cell, face 1; benign, lower lip 1.

TABLE II

Hospital and out-patient cases treated by superficial Roentgen therapy by the Dermatology Section, 41st General and 359th Station Hospitals from August 1942 to July 1944.

	U.S.Military	U.S.Civilian	British Military	TOTAL
Acne varioliformis	1			1
Acne vulgaris	9			9
Dermatitis venenata	5		1	6
Dermatophytosis	34	2	13	49
Dogbite	1			1
Eczema, chronic	5		2	7
Erythrasma	1	1		2
Furunculosis	2		1	3
Hidrosadenitis, axi	llary l			1
Keloid	2			2
Lichen planus	4			4
simplex	3			3
Lymphopathia venere	um 1	9		1 .1
Neurodermatitis	0			9
Onychomycosis	1	og.		1
Otititis externa Parotitis	11	1		12
	1			4
Psoriasis	1		3	1_
Sycosis vulgaris	93	E	18	116
TOTAL	72	,	TO	170

TABLE III

Dermatologic cases transferred to General Hospitals in the United States from May 1942 to October 1945. All diagnoses are primary.

DISEASE	May 1942 Dec 1942	1943	1944	1945 (to 19 October)	TOTALS
Acne vulgaris Alopecia areata Dermatitis, atopic herpetifor medicament unclassifi Infectious eczematoid Dermatophytosis Erythema vultiforme Eczema, chronic Furunculosis Lichen planus simplex Lupus erythematosus Psoriasis Sycosis vulgaris	osa	3 1 1 1 2 1 4 1	2 1 2 1	2 3 4 1 1	7 1 3 3 1 3 2 9 2 6 1 1 3 2 5 2
TOTAL		19	11	13	51



Preventative medicine has been an important function of the Medical Department since the activation of this base. The statistics, given later in this section of the history, will show the value of the great amount of stress that has been placed on this program of improving the sanitation of the Base to prevent large-scale epidemics of communicable diseases amongst the personnel. These statistics have shown a steady decline in the incidence of all communicable and venereal diseases. For the sake of simplicity, this section of the history will be discussed under the following subdivisions:

- 1. Personal Hygiene
- 2. Tropical Diseases
- 3. Venereal Diseases
- 1. Personal Hygiene.

At least once each month, all the barracks and dayrooms on the post are inspected to see that the proper sanitary precautions are being carried out. The construction of the barracks
is typically tropical having screening all around in place of windows
and built on concrete pillars 6 feet above the ground. The screens
are kept in excellent condition at all times.

A routine physical examination of all the personnel on the Base is conducted once each month. The men are checked for all communicable diseases including skin infections, presence of lice, and veneral diseases.

A particularly prevalent disease in this climate is the fungus infection. It is peculiarly resistant to all forms of treatment and the prevention of its spread has been a major problem. The men are given instructions as to the nature of the disease and told how to prevent it. In spite of everything that has been done to keep it under control, it is the most prevalent disease seen in the dispensaries of this Base. There has been a large number of mycotic infections of the ear which were thought to be transmitted through the swimming pool. Addition of more chlorine to the water in the pool has done much to reduce the incidence of this condition although an occasional isolated case is still seen in the clinics.

The attempts thus far to combat the incidence of fungus infections have not been as successful as the preventative measures for other diseases, although it has not been a total failure. Without our unceasing efforts to combat this condition who can tell to what limits it might have progressed.

The diet for the troops has been adequate. With the advent of the hydroponics garden in August 1945, there have been plenty of fresh vegetables for all the men. In 1944 numerous cases of gingivitis were appearing in the dental clinic and were attributed to lack of fresh vegetables.

Alleviation of this condition to a marked degree was noted immediately upon shipment of these perishable items from the States by plane.

## 2. Tropical Diseases.

The malaria control program has functioned smoothly and efficiently and with great success in the prevention of malaria among the military personnel. The benefits obtained from the increasing fight against this disease can best be demonstrated by the following statistics:

1941 (5 mont	hs) -	97.4	cases	per	1000	per	annum
1942		50.0	cases	per	1000	per	annum
1943		19.0	cases	per	1000	per	annum
1944		5.9	cases	per	1000	per	annum
1945 (8 mont	hs) -	5.0	cases	per	1000	per	annum

The effectiveness of this malaria control program has been a remarkable achievement in one of the most highly infective areas in the world.

The program consisting of education of all military personnel in the manner of transmission of the disease and its prevention as well as active measures of mosquito control has been vigorously carried out. Regular malaria control lectures were given periodically to all service men. They were instructed as to the use of the insect repellent and the importance of sleeping under mosquito netting. Spraying of their barracks and periodic checking of the screening was stressed. The active measures used in mosquito control are discussed in paragraph 6 of this section.

Enteric diseases have not been a serious problem at this Base due mainly to the excellent sanitary conditions existing here. The measures used in control of these diseases will be explained fully under the sanitary service later. The statistics available,

are for those cases of simple diarrhea, gastro-enteritis, and dysentery that were of a serious enough nature to be admitted to the hospital. Many mild cases have been seen in the Out Patient Department which are not included in these figures. The number of cases since 1941 are as follows:

1941 (5 months) - 16.0 per 1000 per annum 1942 - 1.33 per 1000 per annum 1943 - 18.0 per 1000 per annum 1944 - 14.0 per 1000 per annum 1945 (8 months) - 3.0 per 1000 per annum

There have been no serious outbreaks of these diseases since activation of the Base and no deaths have occurred.

There is no record of any helminthic infections admitted to this hospital prior to 1944. Any cases prior to them were seen in the Out Patient Clinic and accurate statistics from those records are impossible to obtain. In 1944 there were 8 cases admitted to the hospital with 15 cases in 1945. Ankylostomiasis predominated with Ankylostoma duodenale being found in 20 of the 23 cases. The remaining 3 cases consisted of one case of tapeworm (tenia saginata) and 2 cases of ascaris lumbricoides.

Schistosomiasis has been no problem on this base. There have been 5 cases in the hospital between August 1st 1941 and October 31st 1945.

These cases were found in Puerto Rican soldiers and in all probability they brought the infection with them from there. No cases have been seen among the Continental troops.

There have been 6 cases of filariasis treated in this hospital since its activation in 1941. This low figure in an area in which 35 - 40 percent of the civilian population have microfilaria in their blood stream speaks well for the mosquito control program of this base.

In most cases of filarial infection the parasite exercises no manifest injurious influence whatever and for this reason many cases of this disease have no doubt been overlooked since blood smears for filariasis have not been routinely taken on military personnel leaving this Base.

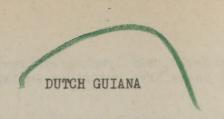
There have been no cases of typhus fever since activation, and only 12 cases of dengue fever have been diagnosed. Here again the mosquito control program has done much to keep down the incidence of dengue.

### 3. Venereal Disease.

Four years of venereal disease control at this Base has shown a continuous attempt to lower the venereal disease rate by education and systematic organization of all units on the Base, so that all types of information could be more readily administered.

The venereal disease rate for the last six months of 1941 was stupendous. Beginning in 1942, the overall rate for each sixmonth period has shown a gradual decrease, so that during 1945 the venereal disease rate on the base has come to much lower than the average rate for the troops stationed in the United States, even though this base is situated in the tropics among a large negro population which is noted for its high venereal disease rate the sorld around.

During the past four years, numerous and varied attempts have been made to seek the best way of reducing the rate which was so high in 1941. This consisted, primarily, of various quarantine and restriction measures, as well as punishment measures to the individuals, to the unit if the rate was too high, or to the group in the unit to which the individual belonged. Apparently, the two best measures which have led to the low rate the base now enjoys are. first and foremost, a stressing of personal morals, and secondly, by stressing continuously and unrelentingly, the importance of personal hygiene by the Venereal Disease Control Officer, the Unit Commanders and the Non-Commissioned Officers in charge of Venereal Disease Control groups. Perhaps profiting by the mistakes of others, and in particular reference to the troops first stationed on this base, it is possible that this has been a contributable factor to its all-time-low present figure. Another small factor has been the dispensing of prophylactic facilities by units, which purchases are made from unit funds, so making them available to all men of their respective units as an expendable item, to be used entirely as needed.



Venereal Disease:

At this station venereal diseases were a major problem and by 15 March 1942, sixty-four (64) cases of gonorrhea, thirteen (13) cases of syphilis, and fourteen (14) cases of chancroid had been contracted by Army personnel. Surinam authorities generally took a "hush-hush" attitude 50 toward venereal diseases; no statistics were available and no laws were available controlling infected and non-infected prostitutes.

A complete venereal disease program was instituted, including individual education, individual prophylaxis, and the establishment of Prophylaxis Station in down-town Paramaribo. Each camp also had its own prophylaxis stations, but the venereal rate had reached three hundred (300) per 1000 per annum by March 1942. Intensive efforts on the part of Medical Officers to locate reported contacts and with the cooperation of Dr. Wolfe, Surinam Public Health Officer, most contacts were persuaded to submit to examination and treatment. However, the rate reached an all time high of three hundred and thiryt-seven (337) per 1000 per annum in September 1942.

For the entire year (1942) the rate per 1000 per annum was two hundred and twenty (220); sixty (60) percent gonorrhea, twenty-seven (27) percent chancroid, eleven (11) percent syphilis, and the remainder other venereal diseases.

Prior to the advent of penicillin it was found that very few cases of gonorrhea were cured after five (5) days of sulfonamide treatments and the majority of cases required a second course. The greatest problem in treatment was in chronic sulfonamide resistant cases. Perhaps this high incidence of resistant cases was due to a peculiar strain of gonococci or to the lessened resistance of the individual. The was found that about six (6) months after coming to this area, white blood counts ran about five thousand (5000) per cubic millimeter, which is a marked decrease from that of white blood counts in the temperate climate. Penicillin proved to be more effective, but it was still necessary to use double or triple of the prescribed exfort units to obtain effective cures. In a few penicillin fast cases, fever therapy was used successfully. In one (1) case as much as 900,000 units of penicillin and two (2) courses of sulfa-therapy were used without any results.

Syphilis, chancroid, and lymphogranuloma, have appeared very rarely, and in all cases have responded satisfactorily to treatment.

During the last two (2) years (1944-45) the venereal disease rate has varied from zero (0) to one hundred sixty-four (164) per 1000 per month, with an average of seventy-nine point two (79.2) for 1944 and fifty-six point six (56.6) for 1945. The highest rate in the history of the force was three hundred and seventy-six (376) per 1000 per month in January 1943, and has been held down since that time only by careful orientation of newly arrived personnel and constant venereal disease education and pass control.

#### Malaria:

Cases of malaria were infrequent in spite of high endemic infestation among natives of Surinam. 58 Intensive and constant mosquito control measures have held the rate per 1000 per annum for the entire year (1942) to approximately twenty (20). In the majority the cases observed were the vivax type and all patients recovered.

There has been very little malaria in the force and no new cases at Zandery. In the majority hospitalization has been for recurrent cases among recently imported Puerto Rican troops. Intense and constant malaria control programs, both personal and general, have made the troops mosquito conscious and held malaria to a negligible factor in a country where the anopheles mosquito is as common as a house fly around a barn lot. Careful drainage, planning and spraying have nearly eliminated all mosquitoes from the Zandery Field area, and from Camp Rochambeau in French Guiana. No fatalities have occurred in the entire history of the Force as a result of malaria.

# Dysentery:

During the month of December (1942) outbreak of Bacillary dysentery occurred at Zandery of epidemic proportions, forty-six (46) being hospitalized before certain unsanitary methods of sewerage disposal were ascertained and eliminated.

Occasional mild outbreaks of dysentery have appeared at sick call, but at no time have outbreaks been sufficient to involve any hospitalization.

### Dengue Fever:

A few scattered cases were seen during the early portion of 1942, but during the month of December 1942, fifteen (15) Army personnel were hospitalized with dengue. 59 Upon classification, mosquitoes caught in the Headquarters building proved to be Stegomia fasciata and after the elimination of all breeding places and the mandatory use of mosquito repellent by all personnel, no new cases appeared.

No new cases of dengue fever have been reported since April 1943 when one (1) case appeared in French Guiana.

#### Filaria:

It is estimated that over twenty-five (25) percent of the native population show definite symptoms of filariasis and that seventy-five (75) percent were infected. 60 However, upon complete survey of troops by microscopic examination in December 1942, no positive smears were found.

Although still prevalent in a high percentage of natives, the latest complete surveys of all troops have shown no positive smears among Continentals. The malaria control program has, of course, also controlled the culicine mosquitoes and consequently lessened the filaria infections. Before being hired, all native employees have been submitted to blood smear examination and those found having a positive smear have not been permitted on the base after 1700 (5:00 P.M.) hours. A few Puerto Rican troops have shown positive smears and upon being sent to the l6lst General Hospital, San Juan, P. R., have been returned immediately to this station for duty, defeating the morale advantage of totally negative personnel. However, the chance of infection was minor because of mosquito discipline.